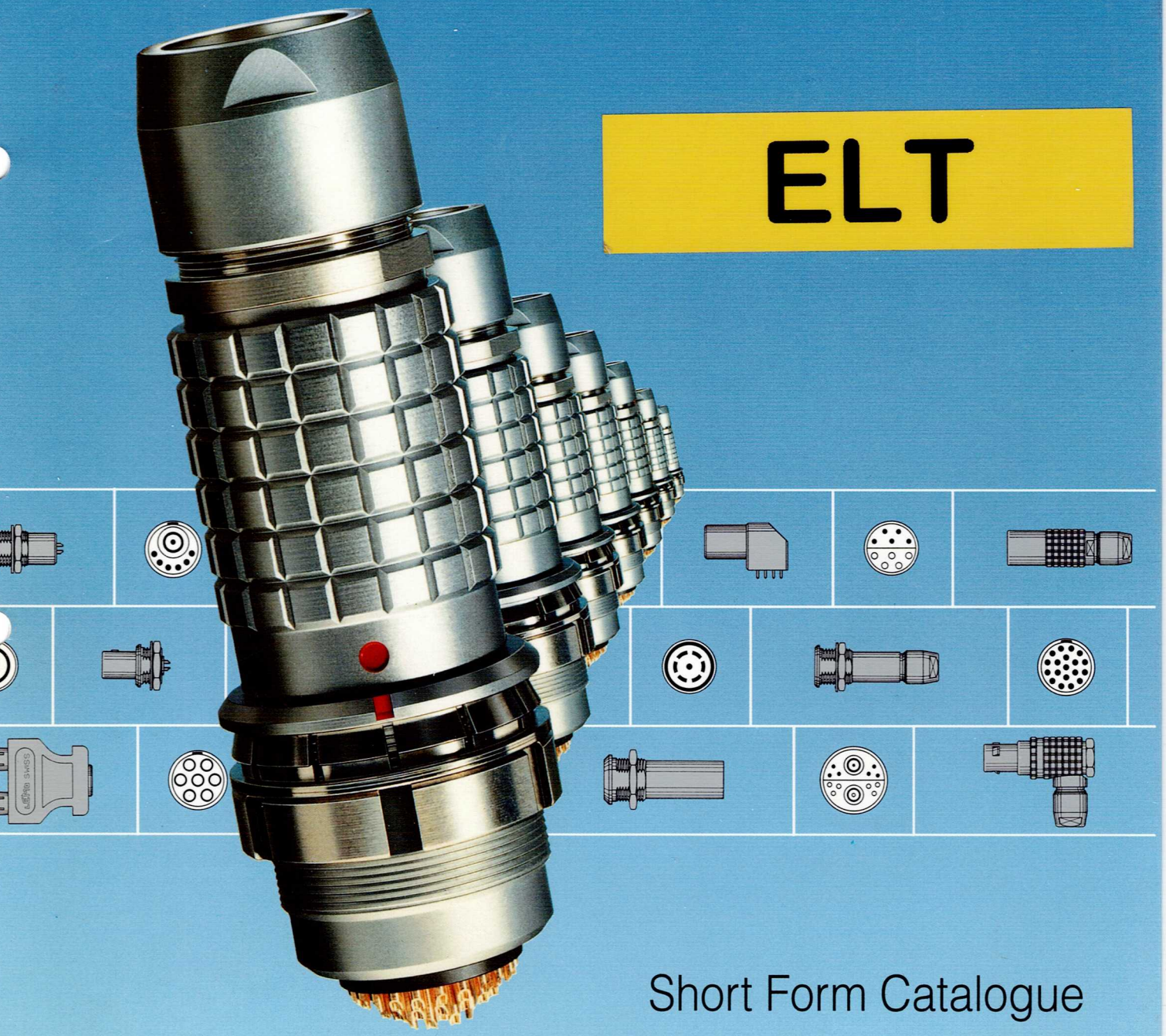
LEMO

Connectors

ELT



Short Form Catalogue

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Connectors	Model	Types												Housing Insulator Material Contact Type	Cable fixing
		Unipole	Coaxial	Multipole	High Voltage	Triaxial	Quadrax	Mixed HV+LV	Mixed Coax+LV	High Voltage (New Gen.)	Optical Fibre	Fluidic	Thermocouple		
Standard															
Series 0S to 6S	5	10	10	10	11	11	–	11	12	49	–	76	53	R	14
Series 01	25	–	25	–	–	–	–	–	–	–	–	–	–	26	26
Series 00	28	–	29	–	–	–	–	–	–	–	–	–	–	30	30
Series 0A	34	–	35	–	–	–	–	–	–	–	–	–	–	36	36
Series 1D	65	–	–	–	–	–	65	–	–	–	–	–	–	66	66
Series 2C	41	–	43	43	–	–	–	–	–	–	–	–	–	42	43
Series 4A	58	–	–	–	–	59	–	–	–	–	–	–	–	60	60
Series Y	45/50	–	–	–	47	–	–	–	–	51	–	–	–	46/50	47/51
Watertight/Vacuumtight															
Series 0E to 6E	8	10	10	10	11	11	–	11	12	–	–	–	–	R	13
Series 3T	39	–	40	–	–	–	–	–	–	–	–	–	–	40	40
Series 4M	62	–	–	–	–	63	–	–	–	–	–	–	–	63	63
New Generation															
Series 00, 0B to 5B	15	–	–	20	–	–	–	20	20	52	70	76	53	R	22
Series 2G	44	–	–	44	–	–	–	–	–	–	–	–	–	42	44
Watertight/Vacuumtight New Gen.															
Series 0K to 5K	18	–	–	20	–	–	–	20	20	–	–	–	–	R	22
Plastic															
Series 3P	23	–	–	24	–	–	–	24	–	–	–	–	–	R	24
Screw-thread															
Series 03	74	–	75	75	–	–	–	–	–	–	–	–	–	75	75
Series EA	67	–	–	–	–	–	–	–	–	–	68	–	–	69	69
Audio-Video Applications	81		82	82		82	82								

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Note:
Figures in the above table refer to the catalogue pages.
The letter R refers to reverse of this fold back cover.

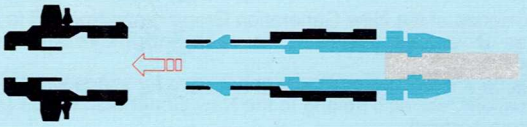
Information for the composition of LEMO connector part numbers can be found on reverse of this fold back cover.

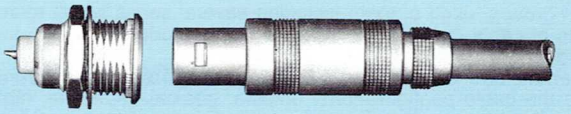
Design, development and fabrication of both prototypes and series of connectors adapted to your technology. The simple and rational concept of LEMO connectors encourages development to suit all connector requirements.

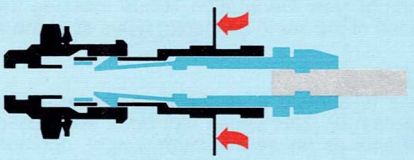
R. MEDINA. 8-NOV-1992

Self-latching Connecting System

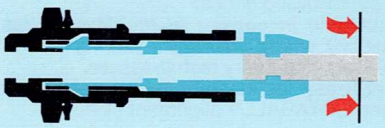
Extremely easy and quick mating/unmating. Absolute security against vibration, shock or pull on the cable. Ease of operation in very limited space



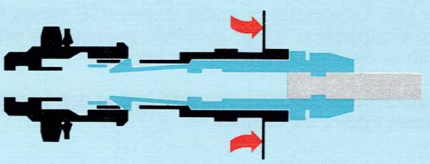




The LEMO self-latching system allows the connector to be mated by simply pushing the plug axially into the socket.



Once firmly latched, connection cannot be broken by pulling on the cable or any other component part other than the outer release sleeve.



When required, the connector is disengaged by a single straight axial pull on the outer release sleeve. This first disengages the latches and then withdraws the plug from the socket.

General Production Programme

Connectors
Unipole from 2 to 150 Amps
Coaxial 50 and 75 Ω
Coaxial 50 Ω (NIM-CAMAC)
Multicoaxial 50 and 75 Ω
Multipole from 2 to 106 contacts
High Voltage 3, 5, 8, 10, 15, 30 and 50 kV dc
Multi High Voltage 3, 5 and 10 kV dc
Triaxial 50 and 75 Ω
Quadrax
Multitriaxial 50 and 75 Ω
Mixed: High Voltage (HV) + Low Voltage (LV)
Mixed: Coax + LV
Thermocouple
Multithermocouple
Monomode fibre optic
Multimode fibre optic
Mixed: multimode fibre optic + LV
Mixed: multimode fibre optic + HV + LV
Mixed: multimode fibre optic + Coax + LV
Fluidic
Multifluidic
Mixed: fluidic + LV
Subminiature
Miniature
Plastic
Printed circuit board
Remote handling
Watertight
Sealed (pressure and/or vacuum)

Adapters
For BNC connectors type UG-88/U
For BNC connectors type UG-89/U
For BNC connectors type UG-657B/U
For BNC connectors type UG-909/U
For C connectors type UG-572 B/U

Adapters
For C connectors type UG-709 A/U
For General-Radio connectors type 874
For UHF connectors
For N connectors type UG-23 B/U
For N connectors type UG-536 B/U
For TNC connectors

Patch Panels
For audio-mono applications: triax or 3 contacts
For audio-stereo applications: quadrax or 6 contacts
For video applications: coax 75Ω

Accessories
Insulators for crimp contacts
Crimp contacts
Caps
Strain reliefs
Insulating washers
Double plastic panel washers
Locking washers
Tapered washers
Hexagonal nuts
Round nuts
Conical nuts
Earthing washers
Lead-through with cable collet

Tools
Spanners
Crimping tools
Positioners
Crimping dies
Extractors

On Request
Assembly onto cable
Connectors with plastic outer shell
Connectors with anodised aluminium outer shell
Connectors with stainless steel housing
Connectors with special radiation resistant insulation material

Introduction

This catalogue, an abridged version of the general catalogue, gives a broad outlook of LEMO's high quality electrical connectors. Our manufacturing programme includes plugs, fixed and free sockets, couplers, adapters, attenuators and bridge plugs, each available in various models. A wide variety of accessories and tooling for assembling onto cables is available. LEMO's connectors are divided into 6 main groups, each of them including several series which relate to the limits of cable diameter that can be accommodated and to the number and size of contacts.
In each series, one can choose between several connector types adapted to the cable configurations: unipole, coaxial, multipole, high voltage, mixed cable, etc. The connector cable fixing system, as well as its diameter determines the max. and the min. cable dimensions.

The Standard Group

The 7 series of these standard connectors range from 0S to 6S.
Series S is available in sealed version for special applications.
The following particular series, explained in separate sections, also belong to the standard group:
– Series 01-Minax, LEMO's smallest self-latching coaxial connectors, widely used on printed circuit boards.
– Series 00, coaxial connectors which meet NIM-CAMAC CD/N549 Standards.
– Series 0A, coaxial connectors specifically designed to accommodate the requirements of telecommunication systems.
– Series 1D, quadrax connectors, widely used for audio stereo applications.
– Series 2C, coaxial and mutipole inserts in short housings for space saving applications.
– Series 4A, triaxial connectors, mainly used in TV studios for video camera applications.
– Series 1Y, 3Y and 6Y, High Voltage connectors meeting most safety requirements.

The Watertight Group

These sealed connectors according to IEC 529/IP 66 standards are arranged in the series 0E to 6E. Several series E-models are available in vacuumtight versions.
Series 3T of coaxial and triaxial connectors and series 4M of triaxial connectors, successfully used in a variety of outdoor instruments, video and camera applications, also belong to the Watertight Group (see separate section).

The New Generation Group

Compared to both Standard and Watertight groups, the New Generation connectors offer a variety of new features:
– Alignment Key : the key on the shell prevents errors in alignment
– Polarized Keying System: The various keying alternatives prevent unwanted cross mating of otherwise similar connectors.
– High contact density on small surfaces.
– Possible use of crimp contacts in order to reduce the cable assembly time.
The 6 series of the New Generation Group range from 0B to 5B.
Series B is also available in vacuumtight version for special applications.
Series 00 and 2G are multipole connectors for space saving applications and also belong to the New Generation Group (see separate section)

The Watertight New Generation Group

This group of connectors combines the watertightness characteristics of the Watertight Group and the technical features of the New Generation Group.The Watertight New Generation Group includes the 0K to 5K which are composed of the same connector types as in the series 0B to 5B.

The Plastic Group

The Plastic Group is derived from the New Generation Group and consists of the series 3P. This series has been specially designed to meet all requirements as far as minimum weight, optimum electrical insulation properties, high thermal and mechanical strength and steam or gas sterilization are concerned.

The Screw-Thread Group

This group includes connectors having a screw type coupling system and are available in the following series:
–The series 03, available in coaxial or multipole types has been designed for applications where watertight sealing of the connection must be guaranteed even under very high pressure.
–The series EA specifically for monomode fibre optic connections is fitted with the patented OPTABALL® alignment system.

Patch Panels

LEMO patch panels have been specifically developed to meet the requirements of several European television and broadcasting establishments to facilitate the switching of large numbers of video signals (OA series coaxial type, 50 or 75 Ω), audio or mono signals (OS series triaxial or OB 3 contacts) or audio stereo (OB series 6 contacts). Connection onto the panel is either by cable assemblies with plugs, or bridge plugs, with or without monitoring sockets.

The various LEMO connector series and types are included within the groups shown above as follows.

Standard Group

Type	Series															
	01	00	0A	0S	1D	1S	2C	2S	3S	4A	4S	5S	6S	1Y	3Y	6Y
Unipole		●		●		●		●	●		●	●				
Coaxial	●	●	●	●		●	●	●	●		●	●				
Multipole				●		●	●	●	●		●	●	●			
High Voltage				●		●		●	●		●	●		●	●	●
Triaxial				●		●		●	●	●	●					
Quadrax					●											
Mixed HV+LV									●		●	●				
Mixed Coax+LV									●		●	●	●			
Thermocouple				●		●		●								
Fluidic		●														

Watertight Group

Type	Series								
	0E	1E	2E	3E	3T	4E	4M	5E	6E
Unipole	●	●	●	●		●		●	
Coaxial	●	●	●	●	●	●			
Multipole	●	●	●	●		●		●	●
High Voltage	●	●	●	●					
Triaxial	●	●	●	●	●		●		
Quadrax									
Mixed HV+LV				●		●		●	
Mixed Coax+LV				●		●		●	●
Thermocouple									
Fluidic									

New Generation Group

Type	Series							
	00	0B	1B	2B	2G	3B	4B	5B
Multipole	●	●	●	●	●	●	●	●
High Voltage							●	●
Mixed HV+LV			●	●		●		
Mixed Coax+LV				●		●	●	●
Thermocouple	●	●	●	●				
Fibre optic		●		●		●	●	●
Mixed FO+LV				●		●	●	●
Fluidic		●				●		

New Generation Watertight Group

Type	Series					
	0K	1K	2K	3K	4K	5K
Multipole	●	●	●	●	●	●
High Voltage						
Mixed HV+LV		●	●	●		
Mixed Coax+LV			●	●	●	●
Thermocouple						
Fibre optic			●	●	●	●
Mixed FO+LV			●	●	●	●
Fluidic						

Plastic Group

Type	Serie
	3P
Multipole	●
Mixed HV+LV	●

Screw-Thread Group

Type	Series	
	03	EA
Coaxial	●	
Multipole	●	
Fibre optic		●

General characteristics

Housings: Material and treatment

Component	Material (Standard)	Surface treatment (µm)																		Note
		Chrome				Nickel			Gold			Black chrome[7]				Olive green				
		Cu	Ni	Au	Cr	Cu	Ni	Au	Cu	Ni	Au	Cu	Ni	Au	Cr	Cu	Ni	Au	Zn	
Outer shell and Collet nut	Brass (ASTM C 385)	0.5	3		0.3	0.5	3		0.5	3	0.5		1		2	0.5			10	6)
	Aluminium alloy (AA 6262)	anodized, colour: see fold back cover																		
	Stainless steel (AISI 303 or 316 L)	without treatment																		
	Avional 152 (AA 2024)						15													
	PPS (ASTM D 4067)	colour: black																		8)
	Polyamide 6	colour:see fold back cover																		9)
	Polysulfone (MIL-P-46120 MR)	colour: light grey																		
	PEEK (MIL-P-46183)	colour: light brown																		
	Mazak					0.5	3													8)
Earthing crown	Brass (ASTM C 385)	0.5	3			0.5	3		0.5	3	1.5	0.5	3			0.5	3			
	Bronze (ASTM C544/QQ-B-550)	0.5	3	1.5		0.5	3	1.5	0.5	3	1.5	0.5	3	1.5		0.5	3	1.5		5)
	Beryllium copper (QQ-C-530)																			1)
Latch sleeve	Special brass	0.5	3			0.5	3		0.5	3	1.5	0.5	3			0.5	3			
	Beryllium copper (QQ-C-530)																			2)
	Stainless steel (AISI 416)	without treatment																		
	Polysulfone (MIL-P-46120 MR)	colour: light grey																		
Locking washer	Bronze (ASTM C 521)	0.5	3			0.5	3		0.5	3	0.5	0.5	3			0.5	3			10)
Nut	Brass (ASTM C 385)	0.5	3			0.5	3		0.5	3	0.5	0.5	3			0.5	3			
	Aluminium alloy (AA 6081)	without treatment																		3)
	Stainless steel (AISI 303 or 316 L)	without treatment																		3)
	Avional 152 (AA 2024)						15													4)
	Polysulfone (MIL-P-46120 MR)	colour: light grey																		

Notes:
The surface treatment standards are the following:
Nickel FS-QQ-N-290A / Chrome FS-QQ-C-320B / Gold MIL-G-45204C type I, class 1
1) For sockets and couplers of the 00, 0A, Y and 4A
2) For straight and elbow plugs of the series 01.
3) Only for sockets with outer shell made of anodized aluminium alloy or stainless steel.
4) Only for fixed sockets with nut or fixed socket with cable collet when outer shell is made of Avional 152 (AA 2024).
5) Gold plating only for unipole, coaxial, triaxial, quadrax and high voltage type connectors
6) Gold thickness as per MIL-G-45204C type I, class 00
7) Protective lacquer of 8 µm thickness minimum
8) For multipole type printed circuit elbow sockets in series S and B
9) For bridge plugs and plugs with two parallel sockets
10) Gold plating only for series 01 and 00

Insulators: Material

Material	Symbol	Unip.	Coaxial					Multipole				High Voltage			Triaxial			Mixed				Th.	Quad
																		main insert		second ins.			
		S/E	S/E	01	00	0A	3T	S/E	B/K	3P	03	S/E	B/K	Y	S/E	4A	4M	S/E	B/K	Coax	HV	S/B	1D
Hard polyethylene	PEhd	○	○		●							○	○	○	○	○	○	○		○	○		
Polyamide (loaded)	PA 6.6	○						●	○									○	○				
Polyether Ethercetone	PEEK	○	○	●	●			●	●	●	●	●	●	●	○	○	○	●	●	○	●	●	
Polytetrafluorethylene	PTFE	●	●		●	●	●					●		●	●	●	●	○		●	●		
Polytetrafluorethylene	FEP							○															
Poly(amide-imide)	PA-imide							○	○			○		○		○		○					
Polybutylenetesephtalate	PBTP							●	●				○		●		●		●			○	●
Polyimide	SP1 M							○	○			○		○		○	○	○	○				
Silicone rubber														●									

● Available ○ On request

Contacts: Material and treatment

The secure, reliable electromechanical connection achieved by the LEMO female contacts is mainly due to two important design details:
— The prod proof closed entry to the contacts, which ensures perfect concentric mating even with well used and/or carelessly handled connectors.
— The pressure spring which maintains a constant, even force on the male contact when mated. The leading edge of the spring is chamfered to slide smoothly on the male contact, preserving the gold-plated surface treatment and preventing undue wear.

Solder contacts
The conductor bucket of these contacts is machined at an angle to form a cup into which the solder can flow.

Crimp contacts
The square form crimp method is used for the coaxial series 00 and 0A connectors as well as for the triaxial series 4A connectors (MIL-C-22520F, class I, type 2). The crimp method for low voltage contacts of multipole and mixed connectors uses the standard indent form according to MIL-C-22520F, class I, type 1.

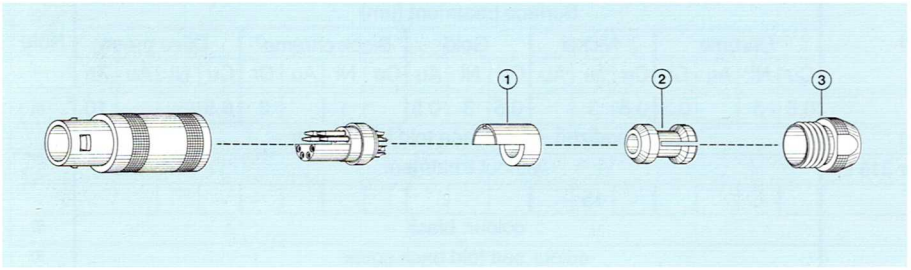
Thermocouple contacts
We offer male and female solder contacts in other special materials, see separate section.

Type	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Au	Note
Male solder	Brass (ASTM C 385)	0.5	3	1.5	1)
Male crimp	Brass (ASTM C 345)				
Male print	Brass (ASTM C 385)				
Female solder	Bronze (ASTM C 544)	0.5	3	2.0	1)
Female crimp	Cu-Be (QQ-C-530)				2)
Female print					
Male intermediate	Brass (ASTM C 385)	0.5	3	1.5	3)
Female intermed.	Bronze (ASTM C 544)	0.5	3	2.0	

Notes: The surface treatment standards are as follows:
–Nickel FS-QQ-N-290A or MIL-C-26074C grade C
–Gold MIL-G-45204C type I, class 1
1) For the series 3P contacts, the gold thickness is 0,5 µm as per MIL-G-45204C type I class 00. On request they are available with a class 1 gold thickness.
2) For the series 0A, 00, Y and 4A connector contacts.
3) For the quadrax, triaxial and mixed coax + low voltage type of connectors.

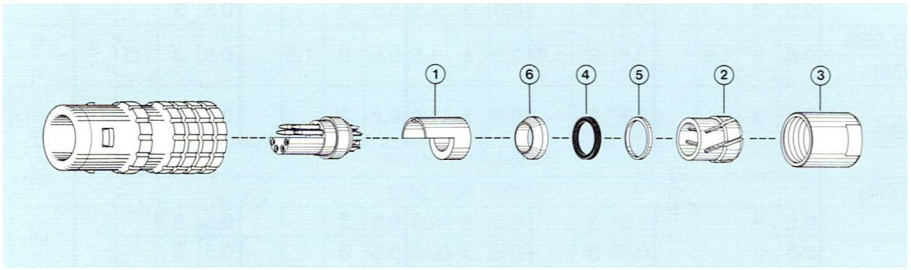
Cable clamping

Series S



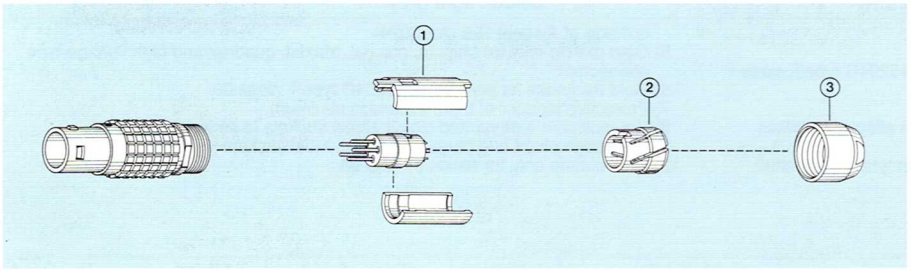
This system consists of a centre-piece ① and a collet ② which is compressed by the collet nut ③ to ensure a good grip onto the cable. When assembling the connector, the cable screen is clamped between the centre-piece and the collet.
The C type system accommodates cables with max. outer diameter up to that of the collet nut. The K type uses a collet nut and a collet of the next housing size up thus increasing the cable outside diameter which can be accommodated.

Series E



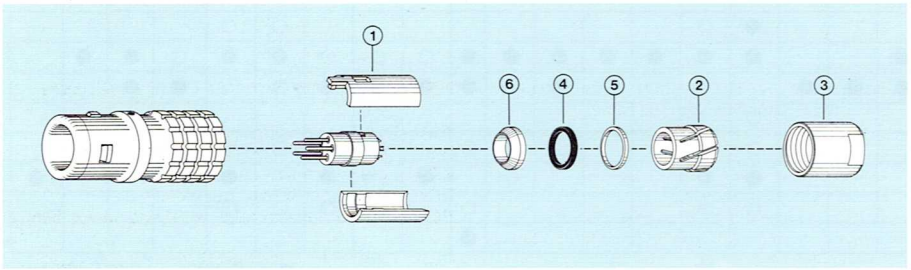
This system is similar to the series S system with the addition of a sealing gland ④ to ensure a watertight seal onto the cable sheath, a metal washer ⑤ to avoid twisting of gland when tightening the collet nut ③ and an earthing cone ⑥ which clamps the cable screen against the centre-piece ①.
This system is available in C and K type.

Series B



This system consists of a split insert carrier ① which positions the insert inside the housing and a collet ② which is compressed by the collet nut ③ to ensure a good grip onto the cable.
The D type system accommodates cable with outer diameters up to that of the collet nut.
The M type consists of an adapter and a collet from a smaller size and therefore grips cables with diameters that are lower than those which can be used with the standard collets of that series.

Series K



This system is identical to the series.E The collet ② is completed by a sealing gland ④ to ensure a watertight seal onto the cable sheath, a metal washer ⑤ to avoid twisting of gland when tightening the collet nut ③ and by an earthing cone ⑥ which clamps the cable screen against the insert carrier ①.
This system is available in C and K type.

Diameter of cables that can be accommodated

Series S

Series	Cable OD			
	Type C collet		Type K collet	
	max.	min.	max.	min.
00	3.0	1.2	4.1	3.0
0S	4.3	1.3	6.7	3.8
1S	6.7	1.3	8.5	6.1
2S	8.5	1.3	10.5	8.1
3S	10.5	3.1	13.0	11.1
4S	13.0	4.1	22.0	13.1
5S	22.0	6.1	30.0	22.1
6S	30.0	11.1	–	–

Series E

Series	Cable OD			
	Type C collet		Type K collet	
	max.	min.	max.	min.
0E	5.0	1.0	–	–
1E	6.7	1.0	8.5	6.6
2E	8.5	1.5	11.0	8.6
3E	11.0	2.1	15.0	10.6
4E	15.0	5.1	23.5	15.6
5E	23.5	9.6	–	–
6E	30.0	13.0	–	–

Series B

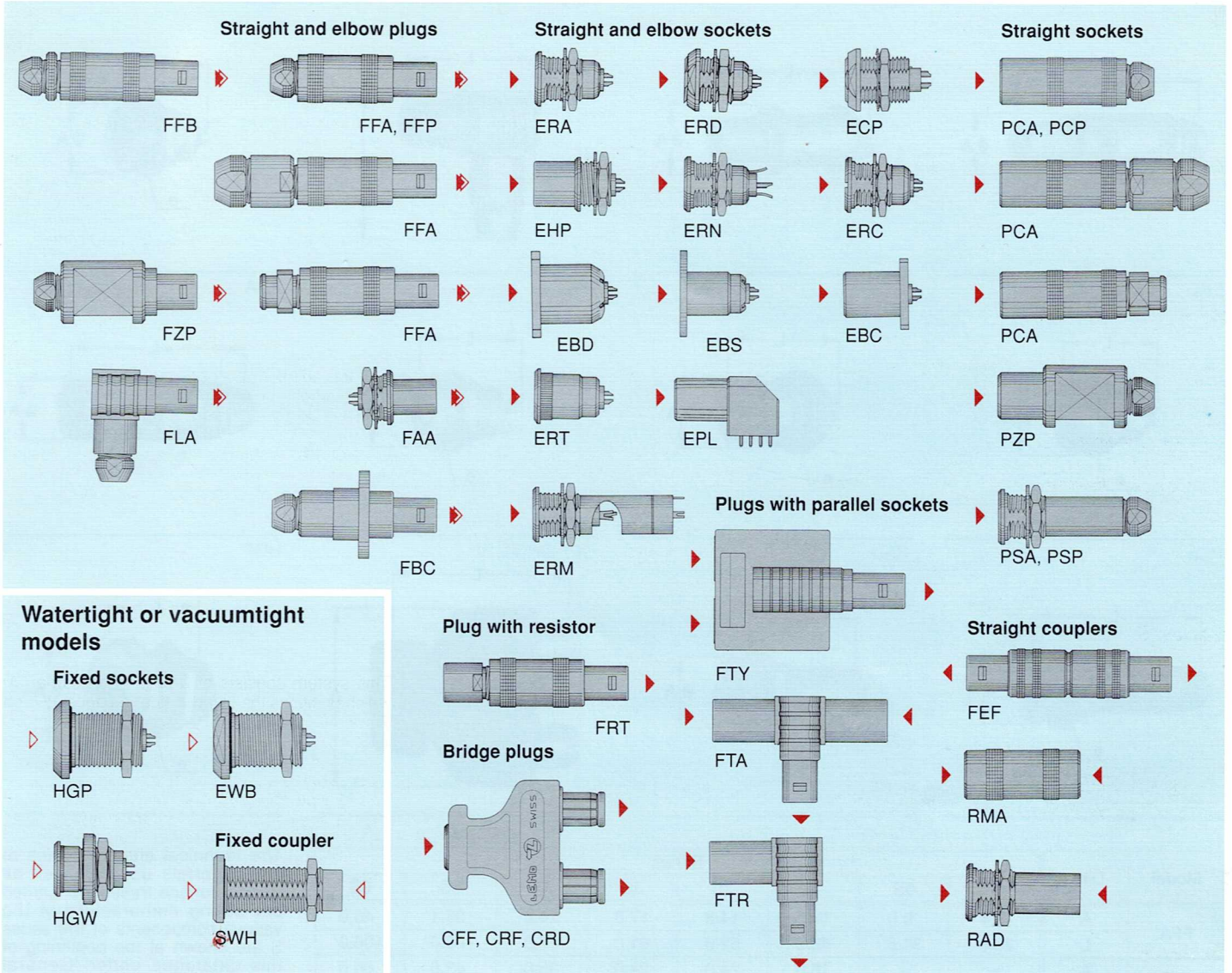
Series	Cable OD			
	Type D collet		Type M collet	
	max.	min.	max.	min.
00	3.5	1.1	–	–
0B	5.5	1.5	–	–
1B	7.5	3.1	3.0	2.0
2B	9.7	4.1	4.0	1.5
3B	11.7	5.1	5.0	4.1
4B	16.0	9.1	9.0	5.1
5B	25.0	9.6	–	–

Series K

Series	Cable OD			
	Type C collet		Type K collet	
	max.	min.	max.	min.
0K	5.0	1.0	–	–
1K	6.7	1.0	8.5	6.6
2K	8.5	1.5	11.0	8.6
3K	11.0	2.1	15.0	10.6
4K	15.0	5.1	23.5	15.6
5K	23.5	9.6	–	–

Note: All dimensions are in millimetres

Interconnections

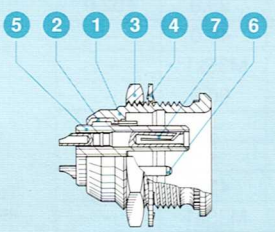


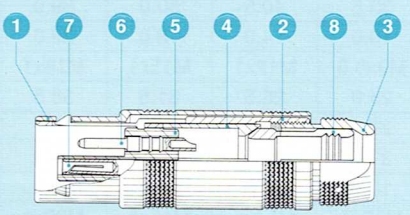
Model description

CFF Bridge plug with two non-latching plugs
CRD Bridge plug with two non-latching plugs and one socket for measurement
CRF Bridge plug with two non-latching plugs and one monitoring socket
EBC Fixed socket with square flange, visible shell (screw fixing)
EBD Fixed socket with square flange (screw fixing)
EBS Fixed socket with round flange (screw fixing)
ECP Fixed socket with two fixing nuts
EHP Fixed socket, visible shell
EPL Elbow socket (90°) for printed circuit
ERA Fixed socket
ERC Fixed socket with slot in flange
ERD Fixed socket (back panel mounting)
ERM Fixed socket with microswitch
ERN Fixed socket with tag
ERT Fixed socket force or adhesive fit
EWB Fixed socket, nut fixing, with two flats on flange
FAA Straight plug non-latching, nut fixing
FBC Straight plug with round flange and cable collet (screw fixing)
FEF Straight coupler with two plugs
FFA Straight plug with cable collet
FFA Straight plug with oversize cable collet
FFA Straight plug with cable collet and nut for fitting a strain relief
FFB Straight plug with cable collet and safety nut
FFP Straight plug with inner anti-rotating device and cable collet
FLA Elbow plug (90°) with cable collet
FRT Straight plug with resistor
FTA T-plug with two sockets in line
FTR Elbow plug (90°) with socket
FTY Straight plug with two parallel sockets
FZP Straight plug for remote handling with cable collet
HGP Fixed socket, nut fixing
HGW Fixed socket, nut fixing, with back washer
PCA Free socket with cable collet
PCA Free socket with oversize cable collet
PCA Free socket with cable collet and nut for fitting a strain relief
PCP Free socket with inner anti-rotating device and cable collet
PSA Fixed socket with cable collet, nut fixing
PSP Fixed socket with inner anti-rotating device and cable collet
PZP Free socket for remote handling with cable collet
RMA Free coupler
RAD Fixed coupler, nut fixing
SWH Fixed coupler, nut fixing

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. hexagonal nut
4. locking washer
5. insulator
6. male contact
7. female contact

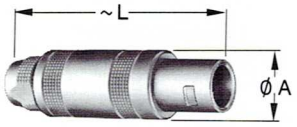




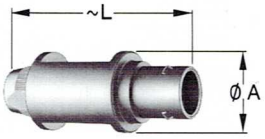
Straight plug
1. outer shell
2. latch sleeve
3. collet nut
4. centre-piece
5. insulator
6. male contact
7. female contact
8. collet

Dimensions

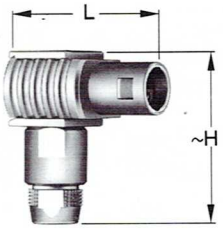
FFA



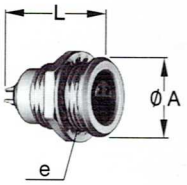
FZP



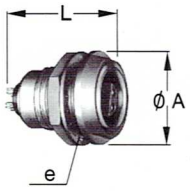
FLA



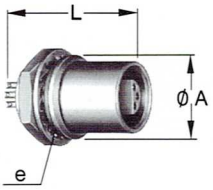
ERA



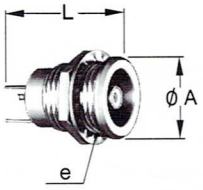
ERD



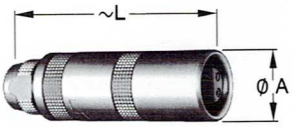
EHP



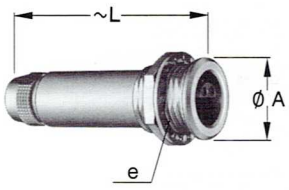
ERN



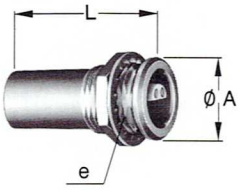
PCA



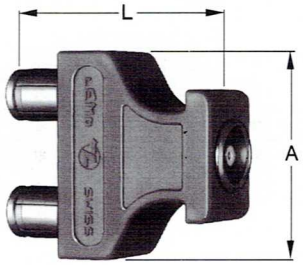
PSA



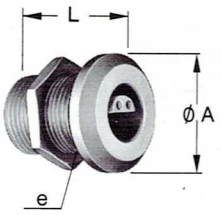
RAD



CFF-CRD-CRF



HGP



Model	Dim.	Series							
		00	0S	1S	2S	3S	4S	5S	6S
FFA	A	6.4	9.0	12.0	14.8	17.8	24.8	35.1	46.0
	L	26.0	34.5	42.5	52.0	61.0	77.0	103.0	106.0
FZP	A	–	–	16.0	24.0	24.0	35.0	43.0	60.0
	L	–	–	42.5	52.0	61.0	77.0	103.0	106.0
FLA	H	16.0	24.5	28.5	37.0	44.0	56.0	76.5	94.0
	L	17.5	23.0	26.5	31.0	38.5	49.0	65.0	81.0
ERA	A	8.0	10.0	14.0	18.0	22.0	28.0	40.0	54.0
	e	M7x0.5	M9x0.6	M12x1	M15x1	M18x1	M25x1	M35x1	M48x1.5
	L	15.1	17.5	21.5	24.0	27.2	32.3	44.9	44.0
ERD	A	–	12.0	16.0	20.0	24.0	–	–	–
	e	–	M9x0.6	M12x1	M15x1	M18x1	–	–	–
	L	–	17.5	21.5	24.0	27.2	–	–	–
EHP	A	–	10.0	14.0	–	22.0	–	–	–
	e	–	M9x0.6	M12x1	–	M18x1	–	–	–
	L	–	17.5	21.5	–	27.2	–	–	–
ERN	A	–	10.0	14.0	–	22.0	–	–	–
	e	–	M9x0.6	M12x1	–	M18x1	–	–	–
	L	–	24.6	32.0	–	52.0	–	–	–
PCA	A	6.4	8.9	11.9	14.8	17.8	24.8	34.7	46.0
	L	24.5	33.5	40.5	50.0	59.0	75.0	99.0	102.0
PSA	A	8.0	10.0	14.0	18.0	22.0	28.0	40.0	54.0
	e	M7x0.5	M9x0.6	M12x1	M15x1	M18x1	M25x1	M35x1	M48x1.5
	L	24.5	33.5	40.5	50.0	59.0	75.0	99.0	102.0
RAD	A	–	10.0	14.0	18.0	22.0	28.0	40.0	–
	e	–	M9x0.6	M12x1	M15x1	M18x1	M25x1	M35x1	–
	L	–	25.0	28.5	31.5	38.5	46.6	60.0	–
CFF-CRD CRF	A	–	27.5	35.0	–	–	–	–	–
	L	–	37.2	42.5	–	–	–	–	–
HGP	A	–	18.0	20.0	20.0	28.0	34.0	45.0	–
	e	–	M12x1	M14x1	M16x1	M20x1	M25x1	M35x1	–
	L	–	22.0	25.5	28.0	35.5	41.0	54.5	–

The technical characteristics of the materials used as well as related surface treatments carried out during manufacture of the various components of the series S are shown at the beginning of this catalogue under 'General Characteristics' (p.3).

For fixed sockets, L means the maximum length of a multipole type.

Note: All dimensions are in millimetres

Models and series

Model	Unipole							Coaxial						Multipole							High Voltage					Triaxial					Mixed HV+LV			Mixed Coax+LV			
	Series							Series						Series							Series					Series					Series			Series			
	00	0S	1S	2S	3S	4S	5S	0S	1S	2S	3S	4S	5S	0S	1S	2S	3S	4S	5S	6S	0S	1S	2S	3S	4S	0S	1S	2S	3S	4S	3S	4S	5S	3S	4S	5S	6S
CFF									●																	●	●										
CRD									●																												
CRF									●																	●	●										
EBC			●	●	●				●	●	●		●		●	●	●		●			●	●	●							●		●	●		●	
EBD				●						●						●							●														
EBS			●						●						●							●															
ECP		●	●	●	●			●	●	●	●			●	●	●	●									●	●	●	●		●			●			
EHP		●	●		●			●	●		●			●	●		●				●	●		●		●	●		●		●			●			
EPL[3]		●						●						●	●																						
ERA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
ERC	●	●	●					●	●					●	●						●	●				●	●										
ERD		●	●	●	●	●		●	●	●	●	●		●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●		●	●		
ERM								●	●																	●	●										
ERN		●	●	●	●			●	●	●	●			●	●	●	●									●	●	●	●								
ERT			●		●				●		●				●		●																				
EWB		●	●	●		●		●	●	●		●		●	●	●		●	●		●	●	●		●	●	●	●								
FAA	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●
FBC		●						●																													
FEF																			●																		
FFA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						●	●	●	●	●	●	●	●	●	●	●	●
FFA[1]	●													●	●	●	●	●													●	●		●	●			
FFA[2]	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●								●	●	●	●	●	●	●		●	●		
FFB		●	●	●	●	●		●	●	●	●	●		●	●	●	●	●			●	●	●	●	●												
FFP														●	●	●	●	●								●	●				●	●		●	●			
FLA	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●	●						●	●	●	●		●	●	●	●	●	●	
FRT									●			●																									
FTA	●	●	●					●	●		●	●		●	●																						
FTR	●				●			●	●		●	●																									
FTY[3]																										●											
FZP			●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●
HGP		●	●	●	●	●		●	●	●	●	●		●	●	●	●	●	●		●	●	●	●		●	●	●	●								
HGW								●							●			●			●					●												
PCA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PCA[1]	●													●	●	●	●	●													●	●		●	●			
PCA[2]	●	●	●	●	●	●		●	●	●	●	●		●	●	●	●	●			●	●	●	●		●	●	●	●	●	●	●		●	●		
PCP														●	●	●	●	●								●	●				●	●		●	●			
PSA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PSP														●	●	●	●	●								●	●				●	●	●	●	●			
PZP			●	●	●				●	●	●				●	●	●					●	●	●				●	●	●		●			●			
RAD	●	●	●		●			●	●	●	●	●		●	●	●	●	●	●		●	●				●	●	●	●								
RMA	●	●	●		●			●	●	●	●	●		●	●	●	●	●	●		●	●				●	●	●	●								
SWH		●		●	●			●	●	●	●	●		●	●	●	●	●	●	●		●		●		●			●								

● Available
1) Oversize collet
2) Collet nut for strain relief
3) For the technical characteristics of these models with multipole and triaxial inserts see pages 79 and 80

Models with oversize collet

The oversize collets in FFA and PCA allow them to be fitted onto the larger cables that can be accommodated by the next housing size up.

Models with collet nut for fitting a strain relief

To order models with a collet nut for fitting a strain relief, add a 'Z' in the variant position of the part number.
The strain reliefs are available in nine colours and several sizes to accommodate different cable outside diameters. They are ordered separately as indicated in the 'Accessories' section.
All other models having a cable collet are also available with a collet nut for fitting a strain relief.

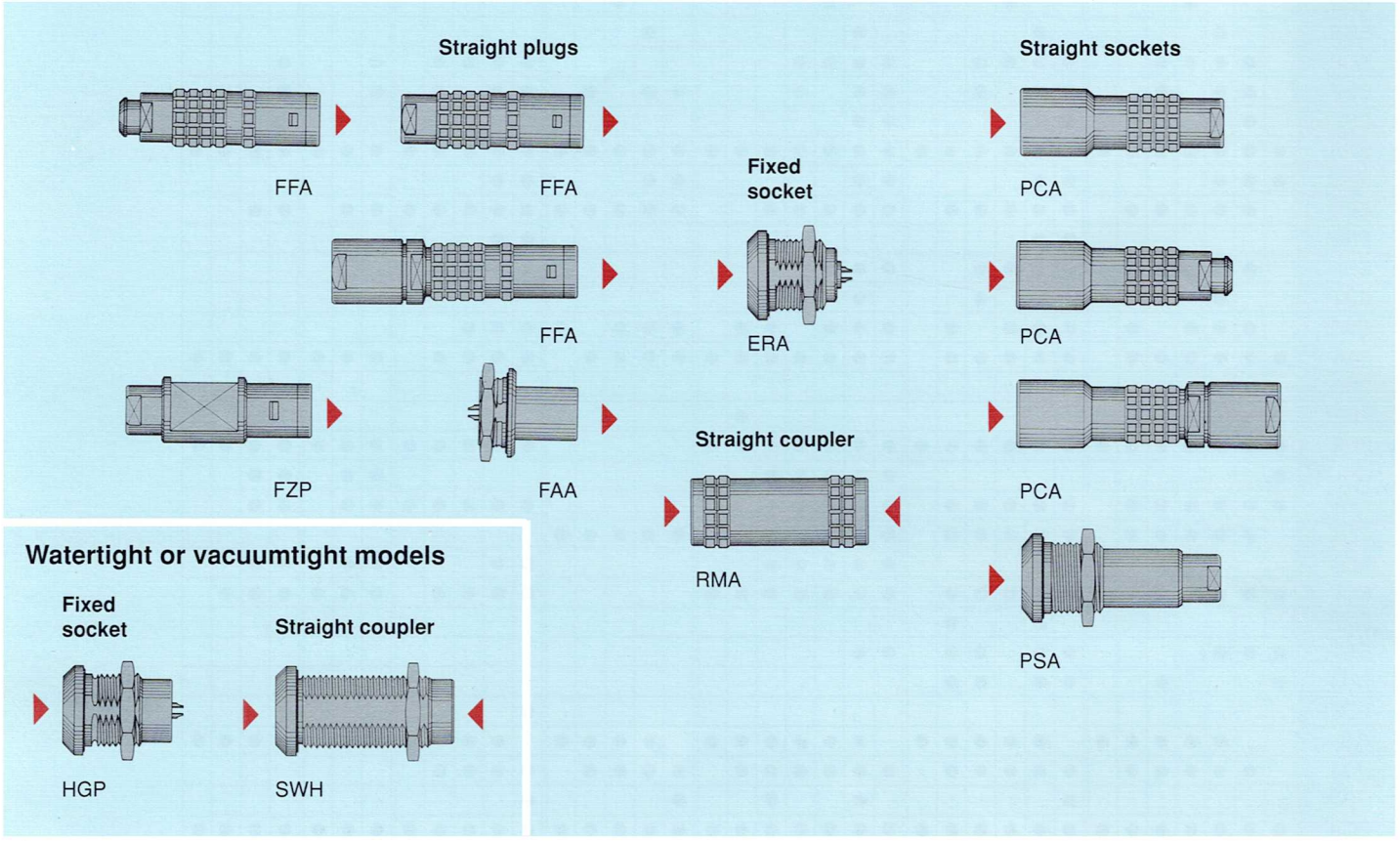
Watertight/Vacuumtight models

The HGP, EWB, HGW fixed socket and SWH coupler allow the device on which they are fitted to reach a protection index of IP66 as per IEC 529 (unmated). They are fully compatible with all non-watertight models of the same series and are widely used for outdoor TV cameras, portable radios, armoured vehicles, ship installations and in aircraft.
Similar technical solutions adopted for the watertight models are used for a vacuumtight version guaranteeing a leakage level of less than 10 - 6 mbar.l.s -1 (as per MIL-STD-1344A standard method 1008).
To seal both the watertight and vacuumtight models, LEMO uses an epoxy resin.

Series E

The Watertight Group of connectors has been specifically designed for outdoor applications.
Their construction includes an inner sleeve and two seals to prevent penetration of solids or liquids into the housing formed by the plug and free socket, fixed socket or coupler. All the models of this series are watertight when mated and give a protection index of IP66 as per IEC 529 standard (mated connectors).

Interconnections

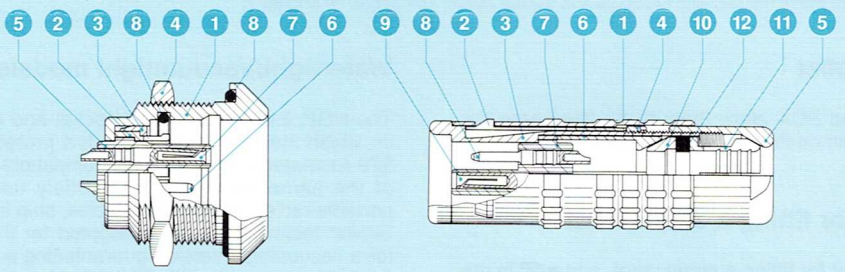


Model description

ERA Fixed socket, nut fixing
FAA Straight plug non-latching, nut fixing
FFA Straight plug with cable collet
FFA Straight plug with oversize cable collet
FFA Straight plug with cable collet and nut for fitting a strain relief
FZP Straight plug for remote handling with cable collet
HGP Fixed socket, nut fixing
PCA Free socket with cable collet
PCA Free socket with oversize cable collet
PCA Free socket with cable collet and nut for fitting a strain relief
PSA Fixed socket with cable collet, nut fixing
RMA Free coupler
SWH Fixed coupler, nut fixing

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. retaining ring
4. hexagonal nut
5. insulator
6. male contact
7. female contact
8. O ring

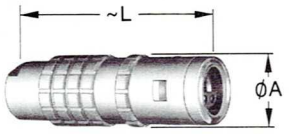


Straight plug
1. outer shell
2. latch sleeve
3. inner shell
4. circlip
5. collet nut
6. centre-piece
7. insulator
8. male contact
9. female contact
10. earthing cone
11. collet
12. gland

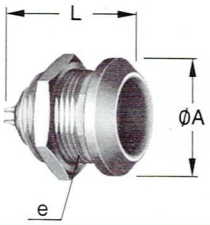
The technical characteristics of the materials used as well as related surface treatments carried out during manufacture of the various components of the series E models are to be found at the beginning of this catalogue under 'General Characteristics' (p.3).

Dimensions

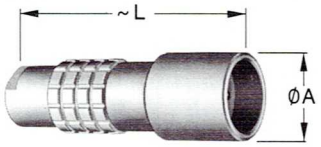
FFA



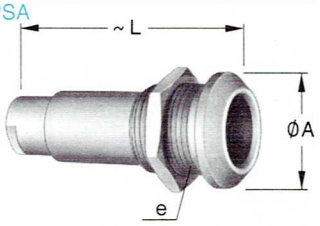
ERA



PCA

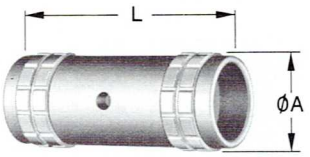


PSA



Model	Dim.	Series						
		0E	1E	2E	3E	4E	5E	6E
FFA	A	11	13	16	19.0	25.0	38.0	47.0
	L	34	42	52	61.0	71.0	92.0	118.0
ERA	A	18	20	25	31.0	37.0	55.0	65.0
	e	M14x1	M16x1	M20x1	M24x1	M30x1	M45x1.5	M55x2
	L	19	26	29	34.5	35.0	44.5	48.5
PCA	A	13	15	19	23.0	29.0	42.0	52.0
	L	34	45	54	65.0	75.5	95.0	125.0
PSA	A	18	20	25	31.0	37.0	54.0	65.0
	e	M14x1	M16x1	M20x1	M24x1	M30x1	M45x1.5	M55x2
	L	34	45	54	65.0	75.5	95.0	125.0
RMA	A	14	16	20	24.0	30.0	44.0	–
	L	30	40	44	54.0	57.0	96.0	–

RMA



Note: All dimensions are in millimetres

Models and series

Model	Unipole					Coaxial					Multipole							High Voltage					Triaxial					Mixed HV+LV			Mixed Coax+LV			
	Series					Series					Series							Series					Series					Series			Series			
	0E	1E	2E	3E	4E	0E	1E	2E	3E	4E	0E	1E	2E	3E	4E	5E	6E	0E	1E	2E	3E	4E	0E	1E	2E	3E	4E	3E	4E	5E	3E	4E	5E	6E
ERA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
FAA			●					●					●							●					●									
FFA	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
FFA[1]												●	●	●	●														●	●		●	●		
FFA[2]	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	●	●		●	●		
FZP		●	●	●	●		●	●	●	●		●	●	●	●	●			●	●	●			●	●	●	●	●	●	●	●	●	●	
HGP	●	●	●	●		●	●	●	●		●	●	●	●	●	●	●	●	●	●	●		●	●	●	●								
PCA	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
PCA[1]												●	●	●	●														●	●		●	●		
PCA[2]	●	●	●	●		●	●	●	●	●	●	●	●	●	●			●	●	●	●		●	●	●	●	●	●	●		●	●		
PSA	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●
RMA			●			●	●	●	●	●	●	●	●	●	●	●		●	●	●		●	●		●		●								
SWH	●	●		●		●	●				●	●	●	●	●	●	●		●					●										

● Available
1) Oversize collet
2) Collet nut for strain relief

Models with oversize collet

The oversize collet in FFA and PCA enables the fitting of cables having outer diameters equal to those applicable to the next size up.

Models with collet nut for fitting a strain relief

To order models with a collet nut for fitting a strain relief, add a 'Z' in the variant position of the part number.
The strain reliefs are available in nine colours and several sizes to accommodate different cable outside diameters. They are ordered separately as indicated in the 'Accessories' section.
All other models having a cable collet are also available with a collet nut for fitting a strain relief.

Watertight/Vacuumtight models

The HGP fixed socket and SWH coupler, in addition to the watertightness of housing as described at the beginning of this section allow the device on which they are fitted to reach a protection index of IP66 as per IEC 529 (unmated). They are fully compatible with the FFA and FZP plugs of the same series and are widely used for outdoor TV cameras, portable radios, armoured vehicles, ship installations and in aircraft.
Similar technical solutions adopted for the watertight models are used for a vacuumtight version guaranteeing a leakage level of less than 10 - 6 mbar.l.s -1 (as per MIL-STD-1344A standard method 1008).
To seal both the watertight and vacuumtight models, LEMO uses an epoxy resin.

Types (Series S-E)

Unipole

Reference	Series	Contact Ø (mm)	Contact type	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
113	00	1.3	●	0.30	0.4	0.9	1.2	8
116	0S-0E	1.6	●	0.50	0.7	1.5	2.1	12
120	1S-1E	2.0	●	0.60	0.9	1.8	2.7	18
130	1S-1E	3.0		0.50	0.7	1.5	2.1	25
130	2S-2E	3.0		0.70	1.0	2.1	3.0	30
140	2S-2E	4.0		0.60	0.8	1.8	2.4	40
140	3S-3E	4.0		0.80	1.1	2.4	3.3	43
160	3S-3E	6.0		0.60	0.8	1.8	2.4	65
140	4S	4.0		1.00	1.4	3.0	4.2	46
160	4S-4E	6.0		0.90	1.3	2.7	3.9	70
112	5S-5E	12.0		0.50	0.7	1.5	2.1	230

Coaxial

Reference	Series	Impedance (Ω)	Contact Ø (mm)	Contact type	Cable group	VSWR (f=GHz)	Us (kV rms)	Ue (kV rms)	Rated Cur. (A)
250	0S-0E	50	0.9	●	1-2-3-4	1.02 +0.25f	1.0	3.0	6
250	1S-1E	50	1.6	●	1-2-3-4	1.01 +0.23f	1.0	3.0	12
275	1S-1E	75	1.3	●	5-6-7	1.02 +0.08f	0.8	2.4	10
250	2S-2E	50	2.0	●	6-7	1.01 +0.95f	1.0	3.0	15
275	2S-2E	75	1.6	●	6-7	1.02 +0.03f	0.5	1.5	12
250	3S-3E	50	3.0	●	8	1.06 +0.5f	1.0	3.0	26
275	3S-3E	75	2.0	●	8	1.04 +0.05f	0.9	2.7	15
250	4S-4E	50	4.0		8-9	1.01 +1.9f	0.7	2.1	36
275	4S-4E	75	3.0	●	8-9-0	1.01 +0.12f	0.6	1.8	26
250	5S	50	5.0		9	1.02 +2.3f	1.0	3.0	45
275	5S	75	4.0		9-0	1.01 +0.7f	1.0	3.0	36

Recommended coaxial cables

Group 1 2 3 4 5 6 7 8 0	Type	Group 1 2 3 6 7 8 9	Type
	RG.11A/U		RG.196A/U
	RG.12A/U		RG.213/U
	RG.58C/U		RG.214/U
	RG.59B/U		RG.216/U
	RG.115A/U		RG.223/U
	RG.122/U		RG.225/U
	RG.142B/U		RG.302/U
	RG.144/U		RG.316/U
	RG.165/U		RG.400/U
	RG.174A/U		HF-2114 Dätwyler
	RG.178B/U		HF-5408/1 Dätwyler
	RG.179B/U		2YCCY 0.4/2.5 Siemens
	RG.187A/U		CCE.99.281.505 LEMO
	RG.188A/U		CCH.99.281.505 LEMO

Multipole

Reference	Series	Contact No	Contact Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
302	0S-0E	2	0.9	0.50	0.7	1.5	2.1	10
303	0S-0E	3	0.7	0.35	0.5	1.0	1.5	7
304	0S-0E	4	0.7	0.35	0.5	1.0	1.5	7
302	1S-1E	2	1.3	0.40	0.6	1.2	1.8	15
303	1S-1E	3	0.9	0.40	0.6	1.2	1.8	10
304	1S-1E	4	0.9	0.40	0.6	1.2	1.8	10
305	1S-1E	2 3	0.9 0.7	0.50 0.50	0.7 0.7	1.5 1.5	2.1 2.1	10 7
306	1S-1E	6	0.7	0.50	0.7	1.5	2.1	7
302	2S-2E	2	1.6	0.60	0.8	1.8	2.4	20
303	2S-2E	3	1.3	0.50	0.7	1.5	2.1	15
304	2S-2E	4	1.3	0.60	0.8	1.8	2.4	15
305	2S-2E	5	1.3	0.50	0.7	1.5	2.1	13
306	2S-2E	6	1.3	0.50	0.7	1.5	2.1	12
307	2S-2E	3 4	1.3 0.9	0.25 0.25	0.4 0.4	0.8 0.8	1.2 1.2	12 9
308	2S-2E	8	0.9	0.25	0.4	0.8	1.2	9
310	2S-2E	10	0.9	0.25	0.4	0.8	1.2	7
302	3S-3E	2	2.0	1.00	1.4	3.0	4.2	23
303	3S-3E	3	2.0	0.50	0.7	1.5	2.1	20
304	3S-3E	4	2.0	0.50	0.7	1.5	2.1	18
305	3S-3E	2 3	2.0 1.3	0.50 0.50	0.7 0.7	1.5 1.5	2.1 2.1	18 14
306	3S-3E	6	1.3	0.70	1.0	2.1	3.0	14
307	3S-3E	7	1.3	0.35	0.5	1.0	1.5	12
308	3S-3E	8	1.3	0.35	0.5	1.0	1.5	10
310	3S-3E	10	1.3	0.35	0.5	1.0	1.5	9
312	3S-3E	12	0.9	0.50	0.7	1.5	2.1	8
313	3S-3E	13	0.9	0.50	0.7	1.5	2.1	8
314	3S-3E	14	0.9	0.50	0.7	1.5	2.1	7
316	3S-3E	16	0.9	0.35	0.5	1.0	1.5	7
318	3S-3E	18	0.9	0.35	0.5	1.0	1.5	6
302	4S-4E	2	4.0	0.70	1.0	2.1	3.0	35
303	4S-4E	3	3.0	0.70	1.0	2.1	3.0	25
304	4S-4E	4	3.0	0.70	1.0	2.1	3.0	22
305	4S-4E	2 3	3.0 2.0	0.70 0.70	1.0 1.0	2.1 2.1	3.0 3.0	22 16
306	4S-4E	6	2.0	0.70	1.0	2.1	3.0	16
307	4S-4E	3 4	2.0 1.3	0.70 0.70	1.0 1.0	2.1 2.1	3.0 3.0	16 13
308	4S-4E	8	1.3	0.90	1.3	2.7	3.9	13
309	4S-4E	9	1.3	0.70	1.0	2.1	3.0	12
310	4S-4E	10	1.3	0.70	1.0	2.1	3.0	11
312	4S-4E	12	1.3	0.70	1.0	2.1	3.0	9
313	4S-4E	13	1.3	0.70	1.0	2.1	3.0	9
314	4S-4E	14	1.3	0.70	1.0	2.1	3.0	9
316	4S-4E	16	0.9	0.70	1.0	2.1	3.0	7
318	4S-4E	18	0.9	0.70	1.0	2.1	3.0	7
320	4S-4E	20	0.9	0.70	1.0	2.1	3.0	7
322	4S-4E	22	0.9	0.70	1.0	2.1	3.0	7
324	4S-4E	24	0.9	0.70	1.0	2.1	3.0	7
302	5S-5E	2	6.0	1.10	1.6	3.7	5.2	50
303	5S-5E	2 1	4.0 6.0	1.10 1.10	1.6 1.6	3.7 3.7	5.2 5.2	35 50
304	5S-5E	4	4.0	1.10	1.6	3.7	5.2	35
305	5S-5E	2 3	4.0 3.0	1.00 1.00	1.4 1.4	3.0 3.0	4.2 4.2	35 25
306	5S-5E	6	3.0	1.00	1.4	3.0	4.2	25
308	5S-5E	8	3.0	0.70	1.0	2.1	3.0	22

● Available: male and female contacts

Multipole

Reference	Series	Contact No	Contact Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
310	5S-5E	10	2.0	0.70	1.0	2.1	3.0	18
312	5S-5E	12	2.0	0.70	1.0	2.1	3.0	18
314	5S-5E	2 12	3.0 2.0	0.60 0.60	0.8 0.8	1.8 1.8	2.4 2.4	20 15
316	5S-5E	16	2.0	0.60	0.8	1.8	2.4	15
318	5S-5E	2 16	3.0 1.6	0.60 0.60	0.8 0.8	1.8 1.8	2.4 2.4	18 11
320	5S-5E	20	1.6	0.60	0.8	1.8	2.4	11
322	5S-5E	2 20	3.0 1.6	0.60 0.60	0.8 0.8	1.8 1.8	2.4 2.4	16 9
324	5S-5E	24	1.6	0.90	1.3	2.7	3.9	9
330	5S-5E	30	1.3	0.60	0.8	1.8	2.4	8
336	5S-5E	36	1.3	0.60	0.8	1.8	2.4	7
340	5S-5E	40	1.3	0.40	0.6	1.2	1.8	7
344	5S-5E	44	1.3	0.40	0.6	1.2	1.8	6
348	5S-5E	48	1.3	0.40	0.6	1.2	1.8	6
303	6E	3	6.0	1.00	1.4	3.0	4.2	50
304	6S-6E	4	8.0	1.00	1.4	3.0	4.2	60
312	6S-6E	12	4.0	0.70	1.0	2.1	3.0	22
316	6E	16	3.0	0.50	0.7	1.5	2.1	14
318	6S-6E	18	4.0	0.40	0.6	1.2	1.8	16
320	6S	20	3.0	0.50	0.7	1.5	2.1	14
320	6E	20	3.0	0.50	0.7	1.5	2.1	14
324	6S	24	3.0	0.40	0.6	1.2	1.8	12
324	6E	24	3.0	0.40	0.6	1.2	1.8	12
330	6S-6E	30	2.0	0.70	1.0	2.1	3.0	10
332	6E	32	2.0	0.50	0.7	1.5	2.1	10
336	6S	36	2.0	0.50	0.7	1.5	2.1	8
336	6E	30 6	1.3 5.0	0.50 0.50	0.7 0.7	1.5 2.1	2.1 2.1	4 22
340	6E	40	2.0	0.50	0.7	1.5	2.1	8
348	6S-6E	48	2.0	0.50	0.7	1.5	2.1	7
360	6S-6E	60	1.6	0.50	0.7	1.5	2.1	5
362	6S-6E	62	1.6	0.50	0.7	1.5	2.1	5
364	6S-6E	64	1.3	0.40	0.6	1.2	1.8	4
372	6S-6E	72	1.3	0.40	0.6	1.2	1.8	4
306	6S-6E	106	0.9	0.25	0.4	0.8	1.2	2

High Voltage

Reference	Series	Contact Ø (mm)	Contact type	AWG max.		Us (kV rms) 1)	Us (kV dc) 1)	Ue (kV rms) 2)	Ue (kV dc) 2)	Rated Cur. (A) 3)
				Solid	Stranded					
403	0S-0E	0.9	●	20	22	2.8	4	4.2	6.0	4
405	1S-1E	1.3	●	18	20	5.0	7	7.5	10.5	8
408	2S-2E	2.0	●	14	16	5.5	8	8.5	12.0	10
405	3S	4.0	●	10	12	5.0	7	7.5	10.5	15
410	3S-3E	2.0	●	12	14	7.0	10	10.5	15.0	10
415	3S	1.3	●	16	18	10.0	15	15.0	21.0	8
410	4S	2.5		6	8	7.0	10	10.5	15.0	12

● Available: male and female contacts
1) as per IEC 130. 1 § 14.5 b)
2) as per MIL-STD 1344A method 3001.1
3) as per IEC 512-3

Triaxial

Reference	Series	Impedance (Ω)	Contact Ø (mm)	Contact type	Cable group	VSWR (f=GHz)	Us (kV rms) contact/screen	Us (kV rms) screen/screen	Ue (kV rms) contact/screen	Ue (kV rms) screen/screen	Rated Cur. (A)
650	0S-0E	50	0.9	●	1-2	1.03 +0.34f	0.35	0.4	1.0	1.2	6
650	1S-1E	50	0.9	●	1-2-3	1.01 +0.17f	0.35	0.4	1.0	1.2	6
650	2S-2E	50	1.6	●	2-3-4	1.01 +0.3f	0.50	0.4	1.5	1.2	12
675	2S-2E	75	0.9	●	4-6	1.01 +0.07f	0.50	0.4	1.5	1.2	6
650	3S-3E	50	2.0	●	3-4-5	1.01 +0.27f	0.80	0.4	2.4	1.2	15
675	3S-3E	75	0.9	●	4-5	1.02 +0.05f	0.60	0.4	1.8	1.2	6
650	4S-4E	50	3.0	●	4-5	1.01 +0.38f	0.90	0.6	2.7	1.8	26
675	4S-4E	75	2.0	●	4-5-7	1.01 +0.14f	0.70	0.5	2.2	1.5	15

Recommended triaxial cables

Group 1	2	3	4	5	Type
●					CTA.99.290.803 LEMO
	●				CTD.99.391.505 LEMO
		●			9222 Belden
		●			21.738 Amphenol
			●		118202 Filotex
			●		21.204 Amphenol
				●	HF-2318 Dätwyler
			●		8215 Belden
			●		8232 Belden

Group 4	5	6	7	Type
●				HF-2426 Dätwyler
		●		CTC.99.371.603 LEMO
●				12765700 F&G
	●			9267 Belden
	●			10069-C-G20 BIW
			●	12766400 F&G
			●	12766601 F&G
			●	8233 Belden
			●	9888 Belden

Mixed HV + LV, Multi High Voltage

Reference	Series	High Voltage						Low Voltage						
		Contact No	Cont. Ø (mm)	AWG max. Solid	AWG max. Stranded	Us (kV rms)	Us (kV dc)	Contact No	Cont. Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
702	3S-3E	1	1.3	20	20	2.1	3	2	2.0	0.50	0.7	1.5	2.1	18
703	3S-3E	1	1.3	20	20	2.1	3	3	1.3	0.70	1.0	2.1	3.0	12
704	3S-3E	1	1.3	20	20	2.1	3	4	1.3	0.35	0.5	1.0	1.5	10
705	3S-3E	1	1.3	20	20	2.1	3	5	1.3	0.35	0.5	1.0	1.5	9
706	3S-3E	1	1.3	20	20	2.1	3	6	1.3	0.35	0.5	1.0	1.5	8
707	3S-3E	1	1.3	20	20	2.1	3	7	1.3	0.35	0.5	1.0	1.5	8
708	3S-3E	1	1.3	20	20	2.1	3	4 4	1.3 0.9	0.35 0.25	0.5 0.4	1.0 0.8	1.5 1.2	8 6
709	3S-3E	1	1.3	20	20	2.1	3	9	0.9	0.25	0.4	0.8	1.2	6
711	3S-3E	1	1.3	20	20	2.1	3	11	0.9	0.25	0.4	0.8	1.2	6
432	3S	2	1.3	20	20	2.1	3	–	–	–	–	–	–	–
732	3S-3E	2	1.3	20	20	2.1	3	2	1.3	0.70	1.0	2.1	3.0	14
734	3S-3E	2	1.3	20	20	2.1	3	4	1.3	0.70	1.0	2.1	3.0	10
702	4S-4E	1	2.0	14	16	2.1	3	2	3.0	0.70	1.0	2.1	3.0	22
703	4S-4E	1	2.0	14	16	2.1	3	3	2.0	0.70	1.0	2.1	3.0	16
704	4S-4E	1	2.0	14	16	2.1	3	4	1.3	0.70	1.0	2.1	3.0	13
705	4S-4E	1	2.0	14	16	2.1	3	5	1.3	0.70	1.0	2.1	3.0	11
706	4S-4E	1	2.0	14	16	2.1	3	6	1.3	0.70	1.0	2.1	3.0	9
707	4S-4E	1	2.0	14	16	2.1	3	7	1.3	0.70	1.0	2.1	3.0	8
708	4S-4E	1	2.0	14	16	2.1	3	8	1.3	0.70	1.0	2.1	3.0	8
709	4S-4E	1	2.0	14	16	2.1	3	9	0.9	0.70	1.0	2.1	3.0	7
710	4S-4E	1	2.0	14	16	2.1	3	10	0.9	0.70	1.0	2.1	3.0	7
712	4S-4E	1	2.0	14	16	2.1	3	12	0.9	0.70	1.0	2.1	3.0	7

Mixed HV + LV, Multi High Voltage

Reference	Series	High Voltage						Low Voltage						
		Contact No	Cont. Ø (mm)	AWG Solid	AWG Stranded	Us (kV rms)	Us (kV dc)	Contact No	Cont. Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
714	4S-4E	1	2.0	14	16	2.1	3	14	0.9	0.7	1.0	2.1	3.0	7
716	4S-4E	1	2.0	14	16	2.1	3	16	0.9	0.5	0.7	1.5	2.1	6
442	4S	2	1.3	20	–	3.5	5	–	–	–	–	–	–	–
732	4S-4E	2	2.0	14	16	2.1	3	2	3.0	0.7	1.0	2.1	3.0	22
733	4S-4E	2	2.0	14	16	2.1	3	3	2.0	0.7	1.0	2.1	3.0	16
734	4S-4E	2	2.0	14	16	2.1	3	4	1.3	0.7	1.0	2.1	3.0	13
735	4S-4E	2	2.0	14	16	2.1	3	5	1.3	0.7	1.0	2.1	3.0	11
736	4S-4E	2	2.0	14	16	2.1	3	6	1.3	0.7	1.0	2.1	3.0	9
737	4S-4E	2	2.0	14	16	2.1	3	7	1.3	0.7	1.0	2.1	3.0	8
739	4S-4E	2	2.0	14	16	2.1	3	9	0.9	0.7	1.0	2.1	3.0	7
740	4S-4E	2	2.0	14	16	2.1	3	10	0.9	0.7	1.0	2.1	3.0	7
742	4S-4E	2	2.0	14	16	2.1	3	12	0.9	0.7	1.0	2.1	3.0	7
433	4S	3	2.0	14	16	2.1	3	–	–	–	–	–	–	–
434	4S-4E	4	2.0	14	16	2.1	3	–	–	–	–	–	–	–
706	5S	1	2.0	14	16	3.5	5	6	2.0	0.7	1.0	2.1	3.0	18
708	5S	1	2.0	14	16	3.5	5	8	2.0	0.4	0.6	1.2	1.8	14
710	5S	1	2.0	14	16	3.5	5	10	1.6	0.6	0.8	1.8	2.4	11
724	5S	1	2.0	14	16	3.5	5	24	1.3	0.4	0.6	1.2	1.8	6
730	5S	1	3.0	10	12	7.0	10	10	2.0	0.4	0.6	1.2	1.8	15
734	5S	2	2.0	14	16	3.5	5	4	3.0	0.7	1.0	2.1	3.0	22
736	5S	2	2.0	14	16	3.5	5	6	2.0	0.7	1.0	2.1	3.0	18
442	5S	2	2.0	14	16	3.5	5	–	–	–	–	–	–	–
738	5S-5E	2	2.0	14	16	3.5	5	8	2.0	0.7	1.0	2.1	3.0	14
740	5S	2	2.0	14	16	3.5	5	10	1.6	0.6	0.8	1.8	2.4	11
754	5S	2	2.0	14	16	3.5	5	24	1.3	0.4	0.6	1.2	1.8	6
443	5S	3	2.0	14	16	3.5	5	–	–	–	–	–	–	–
764	5S	3	2.0	14	16	3.5	5	4	2.0	0.4	0.6	1.2	1.8	18
444	5S-5E	4	2.0	14	16	3.5	5	–	–	–	–	–	–	–
782	5S	4	2.0	14	16	3.5	5	2	2.0	0.4	0.6	1.2	1.8	18
438	5S-5E	8	2.0	14	16	2.1	3	–	–	–	–	–	–	–

Mixed Coax + LV, Multi-coax

Reference	Series	Coaxial						Low Voltage						
		Contact No	Impedance (Ω)	Us (kV rms)	Rated Cur. (A)	Type 1)	Cable 2) group	Contact No	Cont. Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
801	3S-3E	1	50	0.7	5	A1	1-2-3	1	1.3	0.90	1.3	2.7	3.9	14
802	3S-3E	1	50	0.7	5	A1	1-2-3	2	1.3	0.40	0.6	1.2	1.8	14
803	3S-3E	1	50	0.7	5	A1	1-2-3	3	1.3	0.90	1.3	2.7	3.9	14
804	3S-3E	1	50	0.7	5	A1	1-2-3	4	1.3	0.40	0.6	1.2	1.8	10
805	3S-3E	1	50	0.7	5	A1	1-2-3	5	0.9	0.60	0.8	1.8	2.4	8
806	3S-3E	1	50	0.7	5	A1	1-2-3	6	1.3	0.25	0.4	0.8	1.2	8
807	3S-3E	1	50	0.7	5	A1	1-2-3	7	0.9	0.25	0.4	0.8	1.2	7
802	4S-4E	1	50	0.7	5	A1	1-2-3	2	3.0	0.70	1.0	2.1	3.0	21
803	4S-4E	1	50	0.7	5	A1	1-2-3	3	2.0	0.70	1.0	2.1	3.0	16
804	4S-4E	1	50	0.7	5	A1	1-2-3	4	1.3	0.90	1.3	2.7	3.9	13
805	4S-4E	1	50	0.7	5	A1	1-2-3	5	1.3	0.70	1.0	2.1	3.0	11
806	4S-4E	1	50	0.7	5	A1	1-2-3	6	1.3	0.70	1.0	2.1	3.0	9
807	4S-4E	1	50	0.7	5	A1	1-2-3	7	1.3	0.70	1.0	2.1	3.0	8
809	4S-4E	1	50	0.7	5	A1	1-2-3	9	0.9	0.70	1.0	2.1	3.0	7
810	4S-4E	1	50	0.7	5	A1	1-2-3	10	0.9	0.70	1.0	2.1	3.0	7
812	4S-4E	1	50	0.7	5	A1	1-2-3	12	0.9	0.70	1.0	2.1	3.0	7
202	4S	2	50	0.7	5	A1	1-2-3	–	–	–	–	–	–	–
832	4S	2	50	0.7	5	A1	1-2-3	2	1.3	0.70	1.0	2.1	3.0	13
834	4S-4E	2	50	0.7	5	A1	1-2-3	4	1.3	0.70	1.0	2.1	3.0	13
836	4S	2	50	0.7	5	A1	1-2-3	6	0.9	0.60	0.8	1.8	2.4	7
838	4S	2	50	0.7	5	A1	1-2-3	8	0.9	0.60	0.8	1.8	2.4	7

Mixed Coax + LV, Multi-coax

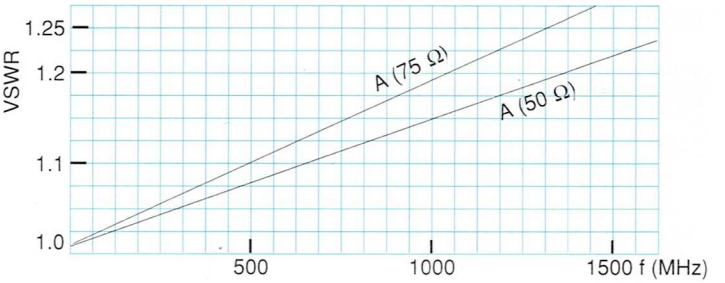
Reference	Series	Coaxial						Low Voltage						
		Contact No	Impedance (Ω)	Us (kV rms)	Rated Cur. (A)	Type 1)	Cable 2) group	Contact No	Cont. Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
842	4S-4E	2	50	0.7	5	A1	1-2-3	12	0.9	0.60	0.8	1.8	2.4	7
803	5E	1	50	1.0	12	A	4-5-6	3	3.0	1.00	1.4	3.0	4.2	25
804	5S-5E	1	50	1.0	6	A0	2-3-4	4	3.0	0.70	1.0	2.1	3.0	22
804	5E	1	75	0.8	7	A	4-5-6	4	3.0	0.70	1.0	2.1	3.0	22
810	5S-5E	1	50	0.7	5	A1	1-2-3	10	1.6	0.60	0.8	1.8	2.4	11
232	5S	2	50	1.0	6	A0	2-3-4	–	–	–	–	–	–	–
282	5S-5E	2	50	1.0	12	A	4-5-6	–	–	–	–	–	–	–
292	5S-5E	2	75	0.8	7	A	4-5-6	–	–	–	–	–	–	–
832	5S-5E	2	50	1.0	6	A0	2-3-4	2	2.0	0.70	1.0	2.1	3.0	18
834	5S-5E	2	50	1.0	6	A0	2-3-4	4	2.0	0.70	1.0	2.1	3.0	18
838	5S	2	50	1.0	6	A0	2-3-4	8	1.6	0.60	0.8	1.8	2.4	12
842	5S-5E	2	50	1.0	6	A0	2-3-4	12	1.3	0.60	0.8	1.8	2.4	9
846	5S-5E	2	50	1.0	6	A0	2-3-4	16	1.3	0.25	0.4	0.8	1.2	8
846	5S-5E	2	75	0.8	7	A	4-5-6	16	1.3	0.25	0.4	0.8	1.2	8
850	5S	2	50	1.0	6	A0	2-3-4	20	1.3	0.25	0.4	0.8	1.2	7
854	5S-5E	2	50	1.0	6	A0	2-3-4	24	1.3	0.25	0.4	0.8	1.2	6
234	5S-5E	4	50	0.7	5	A1	1-2-3	–	–	–	–	–	–	–
876	5S-5E	4	50	0.7	5	A1	1-2-3	6	1.3	0.25	0.4	0.8	1.2	6
826	6S	1	50	1.0	6	A0	2-3-4	26	2.0	0.50	0.7	1.5	2.1	7
826	6S	1	75	0.8	7	A	4-5-6	26	2.0	0.50	0.7	1.5	2.1	7
830	6S	1	50	1.0	12	A	4-5-6	4 30	3.0 1.6	0.50 0.50	0.7 0.7	1.5 1.5	2.1 2.1	14 5
830	6S	1	75	0.8	7	A	4-5-6	4 30	3.0 1.6	0.50 0.50	0.7 0.7	1.5 1.5	2.1 2.1	14 5
843	6E	2	75	0.8	7	A	4-5-6	12 1	2.0 3.0	0.50 0.50	0.7 0.7	1.5 1.5	2.1 2.1	10 14
847	6E	2	50	0.7	5	A1	1-2-3	17	2.0	0.50	0.7	1.5	2.1	10
856	6S-6E	2	50	1.0	12	A	4-5-6	26	2.0	0.50	0.7	1.5	2.1	7
856	6S-6E	2	75	0.8	7	A	4-5-6	26	2.0	0.50	0.7	1.5	2.1	7
857	6E	2	75	0.8	7	A	4-5-6	33	1.3	0.40	0.6	1.2	1.8	4
858	6S	2	50	1.0	12	A	4-5-6	6 6 5 17	1.3 1.6 2.0 0.9	0.40 0.40 0.40 0.40	0.6 0.6 0.6 0.6	1.2 1.2 1.2 1.2	1.8 1.8 1.8 1.8	4 5 10 2
858	6S	2	75	0.8	7	A	4-5-6	6 6 5 17	1.3 1.6 2.0 0.9	0.40 0.40 0.40 0.40	0.6 0.6 0.6 0.6	1.2 1.2 1.2 1.2	1.8 1.8 1.8 1.8	4 5 10 2
859	6S	2	50	0.7	5	A1	1-2-3	36 4	1.3 3.0	0.40 0.40	0.6 0.6	1.2 1.2	1.8 1.8	4 14
865	6E	3	75	0.8	7	A	4-5-6	21 4	1.3 2.0	0.40 0.40	0.6 0.6	1.2 1.2	1.8 1.8	4 10
866	6S	3	50	1.0	6	A0	2-3-4	26	2.0	0.50	0.7	1.5	2.1	7
866	6S-6E	3	75	0.8	7	A	4-5-6	26	1.3	0.40	0.6	1.2	1.8	4
284	6S	4	50	1.0	12	A	4-5-6	–	–	–	–	–	–	–
294	6S	4	75	0.8	7	A	4-5-6	–	–	–	–	–	–	–
880	6S-6E	4	50	0.7	5	A1	1-2-3	20	1.3	0.40	0.6	1.2	1.8	4
882	6S-6E	4	75	0.8	7	A	4-5-6	26	0.9	0.25	0.4	0.8	1.2	2
884	6E	4	75	0.8	7	A	4-5-6	38	0.9	0.25	0.4	0.8	1.2	2
235	6E	5	50	1.0	6	A0	2-3-4	–	–	–	–	–	–	–
887	6S	1 4	50 50	1.0 0.7	26 5	A3 A1	7 1-2-3	7	2.0	0.50	0.7	1.5	2.1	10
888	6E	1 4	50 50	1.0 0.7	26 5	A3 A1	7 1-2-3	8	2.0	0.50	0.7	1.5	2.1	10
890	6S	6	50	0.7	5	A1	1-2-3	4	4.0	0.50	0.7	1.5	2.1	16
893	6S	6	50	0.7	5	A1	1-2-3	20	1.6	0.50	0.7	1.5	2.1	5
238	6S	8	50	1.0	6	A0	2-3-4	–	–	–	–	–	–	–
899	6S-6E	8	50	0.7	5	A1	1-2-3	20	1.6	0.50	0.7	1.5	2.1	5

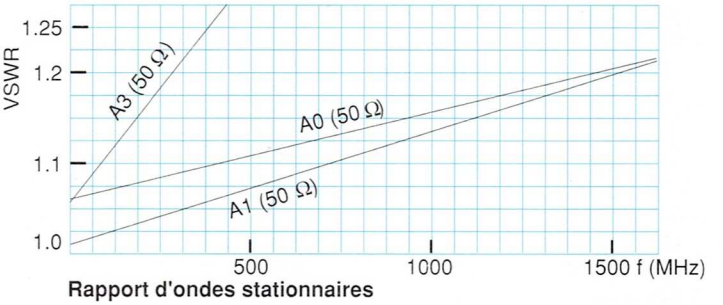
Note:
1) The technical characteristics of the various types are on the following page
2) The cable group number has to be written in the variant position of the part number

Electrical characteristics of the coaxial contacts fitted in mixed coax and multi-coax types

The coaxial contact is permanently fixed in the main insert. The inner conductor of the cable is soldered into the contact while the outer screen is clamped by the collet.

Characteristics	Unit	Type A		Type A0	Type A1	Type A3
Impedance	Ω	50	75	50	50	50
Operating voltage at 50 Hz	kVrms	0.6	0.8	1.0	0.3	1.0
Test voltage at 50 Hz	kVrms	1.8	2.4	3.0	0.9	3.0
Rated current	A	12	7	7	5	15
Insulation resistance	Ω	$>10^{12}$	$>10^{12}$	$>10^{12}$	$>10^{12}$	$>10^{12}$
Contact resistance	mΩ	2.0	2.9	4.5	3.8	2.0
Shell to shell resistance	mΩ	1.8	1.8	1.0	3.0	1.0
VSWR (f = GHz)		1.01 +0.146f	1.01 +0.19f	1.06 +0.1f	1.01 +0.127f	1.06 +0.5f





Rapport d'ondes stationnaires

Recommended coaxial cables for mixed coax and multi-coax connectors

Group[1] 1	3	4	5	6	7	Type
			●			RG.58C/U
				●		RG.59B/U
					●	RG.115A/U
	●					RG.122/U
			●			RG.142B/U
					●	RG.165/U
	●					RG.174A/U
●						RG.178B/U

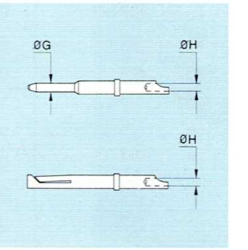
Group 1) 1	2	3	5	6	7	Type
	●					RG.188A/U
●						RG.196A/U
					●	RG.213/U
				●		RG.223/U
			●			RG.302/U
	●					RG.316/U
			●			RG.400/U
		●				CCE.99.281.505 LEMO

1) The cable group number corresponding to the chosen cable must be written in the variant position of the part number

Note: All dimensions are in millimetres

Solder contacts, max. inner conductor diameter

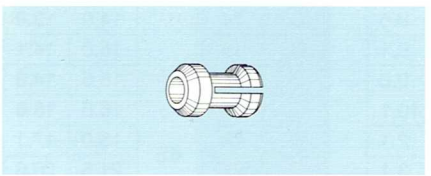
Contact ØG	Contact ØH	Conductor max.Ø	Conductor max. AWG solid	Conductor max. AWG stranded
0.7	0.6	0.55	24	26
0.9	0.8	0.75	22	22
1.3	1.0	0.95	20	20
1.6	1.4	1.35	16	18
2.0	1.8	1.75	14	16
2.5	4.0[1]	3.95	10	10
3.0	2.7	2.65	14	16
4.0	3.7	3.65	10	10
6.0	5.4	5.35	–	8
8.0	7.0	6.95	–	6
12.0	6.2	6.15	–	4

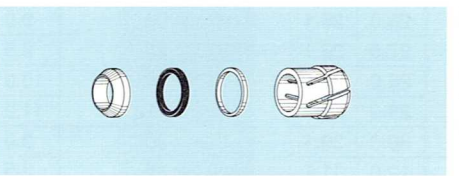


1) For the female contact, values are: 3.0, 2.95, 12, 14.

Collets (Series S-E)

For coaxial connectors (50 or 75 Ω)





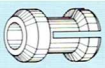
Cable	Series	Type	Ø	Series	Type	Ø
RG.11A/U	3S-4S	C	11	3E-4E	C	11
RG.12A/U	4S-5S	C	12	4E	C	12
RG.58C/U	1S-2S	C	52	1E-2E	C	50
RG.59B/U	1S-2S	C	62	1E-2E	C	60
RG.115A/U	3S-4S	C	11	3E-4E	C	11
RG.122/U	0S-1S	C	42	0E-1E	C	40
RG.142B/U	1S-2S	C	52	1E-2E	C	50
RG.144/U	3S-4S	C	11	3E-4E	C	11
RG.165/U	3S-4S	C	11	3E-4E	C	11
RG.174A/U	0S-1S	C	32	0E-1E	C	30
RG.178B/U	0S-1S	C	22	0E-1E	C	20
RG.179B/U	1S-2S	C	27	1E-2E	C	25
RG.187A/U	1S-2S	C	27	1E-2E	C	25
RG.188A/U	0S-1S	C	27	0E-1E	C	25
RG.196A/U	0S-1S	C	22	0E-1E	C	20

Cable	Series	Type	Ø	Series	Type	Ø
RG.213/U	3S-4S	C	11	3E-4E	C	11
RG.214/U	4S-5S	C	11	4E	C	11
RG.216/U	4S-5S	C	11	4E	C	11
RG.223/U	1S-2S	C	62	1E-2E	C	55
RG.225/U	4S-5S	C	11	4E	C	11
RG.302/U	1S-2S	C	52	1E-2E	C	50
RG.316/U	0S-1S	C	27	0E-1E	C	25
RG.400/U	1S-2S	C	52	1E-2E	C	50
HF-2114 Dätwyler	0S-1S	C	32	0E-1E	C	30
HF-5408/1 Dätwyler	1S-2S	C	62	1E-2E	C	55
2YCCY 0.4/2.5 Siemens	1S-2S	C	52	1E-2E	C	45
CCE.99.281.505 LEMO	0S-1S	C	32	0E-1E	C	30
CCH.99.281.505 LEMO	0S-1S	C	32	0E-1E	C	30

For triaxial connectors (50 or 75 Ω)

Cable		Series	Type	Ø	Series	Type	Ø
CTA.99.290.803 LEMO		0S-1S	C	32	0E-1E	C	30
CTD.99.391.505 LEMO		0S-1S 2S	C	42	0E-1E 2E	C	40
9222	Belden	1S-2S 3S	C	62	1E-2E 3E	C	60
21.738	Amphenol	1S-2S	C	52	1E-2E	C	50
118202	Filotex	2S	C	77	2E	C	75
21.204	Amphenol	3S	C	77	3E	C	75
		4S	C	82	4E	C	75
HF-2318	Dätwyler	3S	C	11	3E	C	11
		4S	C	11	4E	C	10
8215	Belden	2S	C	87	2E	C	85
12765700	F&G	3S-4S	C	92	3E-4E	C	85
8232 HF-2426	Belden Dätwyler	2S-3S 4S	C	82	2E-3E 4E	C	80
CTC.99.371.603 LEMO		2S	C	42	2E	C	40
9267	Belden	3S	C	97	3E	C	95
		4S	C	10	4E	C	95
10069-C-G20 BIW		3S	C	10	3E	C	10
		4S	C	10	4E	C	95
12766400	F&G	4S	C	11	4E	C	11
12766601 8233 9888	F&G Belden Belden	4S	C	13	4E	C	12

Collets (Series S)



Reference		Series	Cable OD	
Type	Ø		max.	min.
C	15	00	1.4	1.2
C	17		1.6	1.5
C	22		2.1	1.7
C	27		2.6	2.2
C	29		2.8	2.7
C	31		3.0	2.8
K	37		3.6	3.0
K	42		4.1	3.3
C	17	0S	1.6	1.3
C	22		2.1	1.7
C	27		2.6	2.2
C	32		3.1	2.7
C	37		3.6	3.0
C	42		4.1	3.3
C	44		4.3	3.5
K	47		4.6	3.8
K	52		5.1	4.3
K	57		5.6	4.8
K	62		6.1	5.3
K	66		6.5	5.9
K	68		6.7	6.0
C	17	1S	1.6	1.3
C	22		2.1	1.7
C	27		2.6	2.2
C	32		3.1	2.6
C	37		3.6	2.7
C	42		4.1	3.3
C	47		4.6	3.8
C	52		5.1	4.3
C	57		5.6	4.8
C	62		6.1	5.3
C	66		6.5	5.9
C	68		6.7	6.0
K	72		7.0	6.1
K	77		7.5	7.1
K	82		8.0	7.6
K	87		8.5	8.1
C	17	2S	1.5	1.3
C	27		2.5	1.7
C	32		3.0	2.5
C	42		4.0	3.1
C	52		5.0	4.1
C	62		6.0	5.1
C	72		7.0	6.1
C	77		7.5	7.1
C	82		8.0	7.6
C	87		8.5	8.1
K	92		9.0	8.1
K	97		9.5	9.1
K	10		10.0	9.6
K	11		10.5	10.1
C	42	3S	4.0	3.1
C	52		5.0	4.1
C	62		6.0	5.1
C	72		7.0	6.1
C	77		7.5	7.1
C	82		8.0	7.6
C	92		9.0	8.1
C	97		9.5	9.1
C	10		10.0	9.6
C	11		10.5	10.1
K	12		12.0	11.1
K	13		13.0	12.1

Reference		Series	Cable OD	
Type	Ø		max.	min.
C	52	4S	5.1	4.2
C	62		6.1	5.2
C	72		7.1	6.2
C	82		8.1	7.2
C	92		9.1	8.2
C	10		10.1	9.2
C	11		11.1	10.2
C	12		12.1	11.2
C	13		12.6	12.2
C	13		13.1	12.2
K	14		14.1	13.2
K	15		15.1	14.2
K	16		16.1	15.2
K	17		17.1	16.2
K	18		18.1	17.2
K	19		19.1	18.2
K	20		20.1	19.2
K	21		21.1	20.2
K	22		22.1	21.2
C	72	5S	7.0	6.1
C	82		8.0	7.1
C	92		9.0	8.1
C	10		10.0	9.1
C	11		11.0	10.1
C	12		12.0	11.1
C	13		13.0	12.1
C	14		14.0	13.1
C	15		15.0	14.1
C	16		16.0	15.1
C	17		17.0	16.1
C	18		18.0	17.1
C	19		19.0	18.1
C	20		20.0	19.1
C	21		21.0	20.1
C	22		22.0	21.1
K	23		23.0	22.1
K	24		24.0	23.1
K	25		25.0	24.1
K	26		26.0	25.1
K	27		27.0	26.1
K	28		28.0	27.1
K	29		29.0	28.1
K	30		30.0	29.1
C	12	6S	12.0	11.1
C	13		13.0	12.1
C	14		14.0	13.1
C	15		15.0	14.1
C	16		16.0	15.1
C	17		17.0	16.1
C	18		18.0	17.1
C	19		19.0	18.1
C	20		20.0	19.1
C	21		21.0	20.1
C	22		22.0	21.1
C	23		23.0	22.1
C	24		24.0	23.1
C	25		25.0	24.1
C	26		26.0	25.1
C	27		27.0	26.1
C	28		28.0	27.1
C	29		29.0	28.1
C	30		30.0	29.1

(Series E)

Reference		Series	Cable OD	
Type	Ø		max.	min.
C	10	0E	1.2	1.0
C	15		1.5	1.3
C	20		2.0	1.6
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		5.0	4.1
C	15	1E	1.5	1.0
C	20		2.0	1.6
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1
K	70		7.0	6.6
K	75		7.5	7.1
K	80		8.0	7.6
K	85		8.5	8.1
C	15	2E	1.7	1.5
C	20		2.0	1.8
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1
C	70		7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
K	90		9.0	8.6
K	95		9.5	9.1
K	10		10.0	9.6
K	11		11.0	10.1
C	30	3E	3.0	2.1
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1
C	70		7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
C	90		9.0	8.6
C	95		9.5	9.1
C	10		10.0	9.6
C	11		11.0	10.1
K	11		11.7	10.6
K	12		12.8	12.1
K	13		13.5	12.9
K	14		14.3	13.6
K	15		15.0	14.4

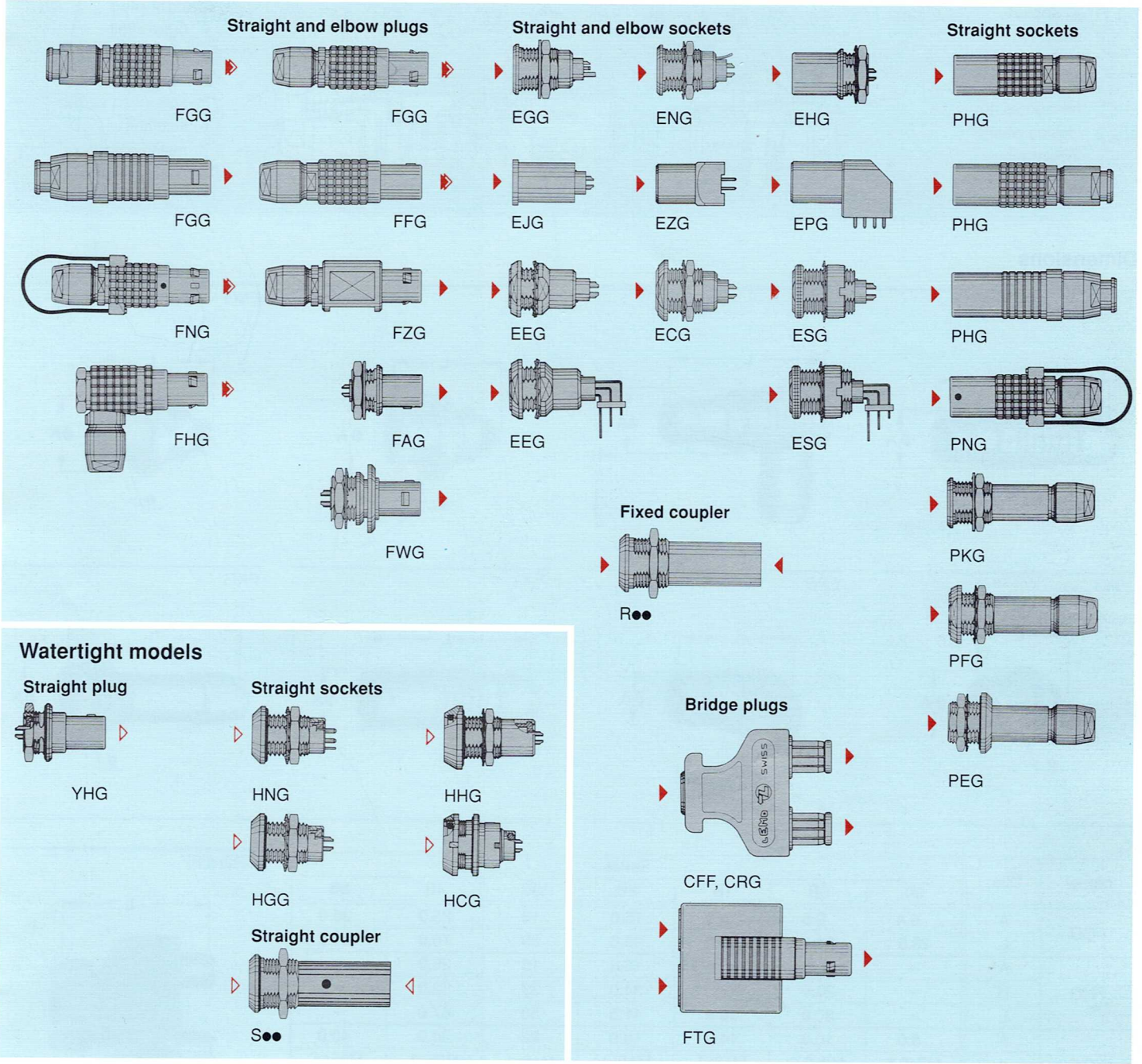
Reference		Series	Cable OD	
Type	Ø		max.	min.
C	50	4E	5.3	5.1
C	55		5.6	5.4
C	60		6.0	5.7
C	65		6.5	6.1
C	70		7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
C	90		9.0	8.6
C	95		9.7	9.1
C	10		10.5	9.8
C	11		11.7	10.6
C	12		12.8	12.1
C	13		13.5	12.9
C	14		14.3	13.6
C	15		15.0	14.4
K	16		16.5	15.6
K	17		17.5	16.6
K	18		18.5	17.6
K	19		19.5	18.6
K	20		20.5	19.6
K	21		21.5	20.6
K	22		22.5	21.6
K	23		23.5	22.6
C	10	5E	10.5	9.6
C	11		11.5	10.6
C	12		12.5	11.6
C	13		13.5	12.6
C	14		14.5	13.6
C	15		15.5	14.6
C	16		16.5	15.6
C	17		17.5	16.6
C	18		18.5	17.6
C	19		19.5	18.6
C	20		20.5	19.6
C	21		21.5	20.6
C	22		22.5	21.6
C	23		23.5	22.6
C	14	6E	14.0	13.0
C	15		15.0	14.1
C	16		15.5	14.6
C	17		16.5	15.6
C	18		18.0	17.1
C	21		21.5	20.6
C	22		22.0	21.1
C	23		23.0	22.1
C	27		27.0	26.1
C	30		30.0	29.5

Note:
The C type collets will clamp screened or unscreened cables. On request the L type collets which will only clamp unscreened cables are available with the same diameters as the C type

All dimensions are in millimetres

Interconnections

Series B



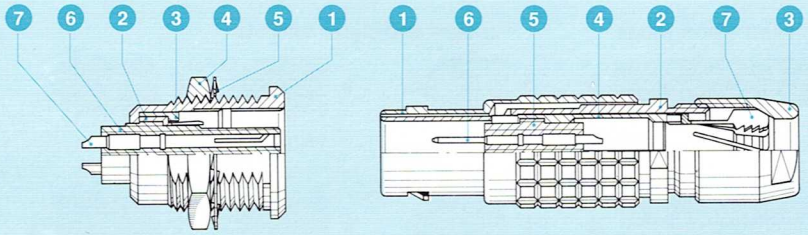
Model description

CFF Bridge plug with two non-latching plugs
CRG Bridge plug with two non-latching plugs and one monitoring socket with key (G)
ECG Fixed socket, with two nuts, key (G) or keys (code A...M) (back panel mounting)
EEG Fixed socket, nut fixing, with key (G) or keys (code A...M) (back panel mounting)
EEG Fixed socket, nut fixing, with key (G) or keys (code A...M) with 90° contacts for printed circuit (back panel mounting)
EGG Fixed socket, nut fixing, with key (G) or keys (code A...M)
EGG Fixed socket, nut fixing, with key (G) or keys (code A...M), PEEK shell
EHG Fixed socket, nut fixing, with key (G) or keys (code A...M), visible shell
EJG Fixed socket, force or adhesive fit, with key (G)
ENG Fixed socket with tag, nut fixing, with key (G) or keys (code A...M)
EPG Elbow plug (90°) with key (G) for printed circuit
ESG Fixed socket with two round nuts, key(G), threaded shell
ESG Fixed socket with two round nuts, key(G) with 90° contacts for printed circuit, threaded shell
EZG Straight socket for printed circuit with key (G)
FAG Straight plug, non-latching, nut fixing, with key (G) or keys (code A...L)
FFG Straight plug, non-latching with key (G) and cable collet
FGG Straight plug with key (G) or keys (code A...M) and cable collet
FGG Straight plug with key (G) or keys (code A...M), cable collet and nut for fitting a strain relief
FGG Straight plug with key (G) or keys (code A...M), cable collet and nut for fitting a strain relief, PEEK release sleeve
FHG Elbow plug with key (G) or keys (code A...M) and cable collet
FNG Straight plug with key (G) or keys (code A...L) and cable collet with lanyard release
FTG Straight plug with two parallel sockets, key (G)
FWG Straight plug, nut fixing, with key (G)
FZG Straight plug for remote handling, with key(G) or keys (code A...L) and cable collet
HCG Fixed socket, nut fixing, with key (G) watertight when mated (back panel mounting)
HGG Fixed socket, nut fixing, watertight,when mated with key (G) or keys (code A...M)
HHG Fixed socket, nut fixing, with key (G) watertight when mated
HNG Fixed socket with tag, nut fixing, watertight when mated, with key (G)
PEG Fixed socket, nut fixing, with key (G) and cable collet (back panel mounting)
PFG Fixed socket, with two nuts, with key (G) and cable collet or keys (code A...M) (back panel mounting)
PHG Free socket with key (G) or keys (code A...M) and cable collet
PHG Free socket with key (G) or keys (code A...M), cable collet and nut for fitting a strain relief
PHG Free socket with key (G) or keys (code A...M), cable collet and nut for fitting a strain relief, PEEK shell
PKG Fixed socket, nut fixing, with key (G) or keys (code A...M) and cable collet
PNG Free socket with key (G) or keys (code A...L) and cable collet, with lanyard release
R●● Fixed coupler, nut fixing, with keys (A, B, J and K) on one side and key (G) or keys (A,B,C,J,K,L and M) on the other
S●● Fixed coupler, watertight, nut fixing, with keys (J,K and L) on one side and key (G) or keys (A,B and J) on the other
YHG Straight plug, non-latching, watertight, with key (G) or keys (code A....M)

Part section showing internal components

Fixed socket

1. shell
2. earthing crown
3. retaining ring
4. hexagonal nut
5. locking washer
6. insulator
7. female contact

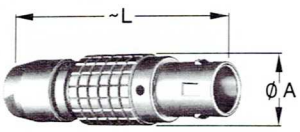


Straight plug

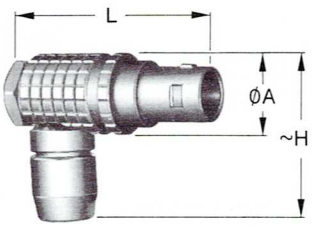
1. outer shell
2. latch sleeve
3. collet nut
4. split insert carrier
5. insulator
6. male contact
7. collet

Dimensions

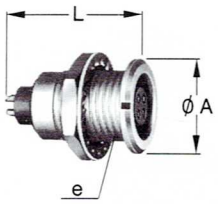
FGG



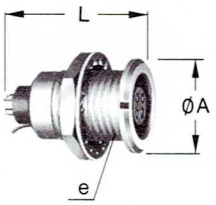
FHG



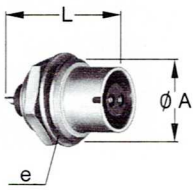
EGG



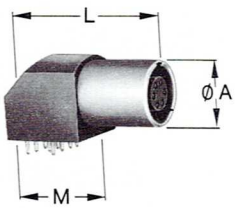
ENG



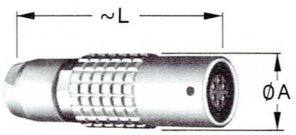
EHG



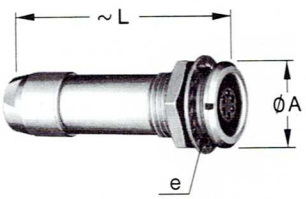
EPG



PHG

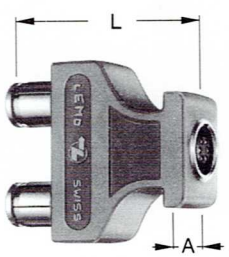


PKG

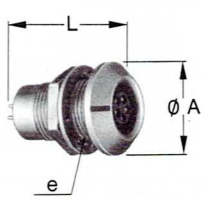


Model	Dim.	Series						
		00	0B	1B	2B	3B	4B	5B
FGG	A	6.4	9.5	12.0	15.0	18	25.0	35.0
	L	28.5	36.0	43.0	49.0	59	76.0	104.0
FHG	A	–	11.0	13.5	16.5	19	26.0	–
	H	–	23.0	28.0	34.0	37	52.0	–
	L	–	30.0	36.0	41.5	50	67.0	–
EGG	A	8.0	10.0	14.0	18.0	22	28.0	40.0
	e	M7x0.5	M9x0.6	M12x1	M15x1	M18x1	M25x1	M35x1
	L	15.5	19.5	21.7	25.0	30	34.5	45.5
ENG	A	–	10.0	14.0	18.0	–	28.0	40.0
	e	–	M9x0.6	M12x1	M15x1	–	M25x1	M35x1
	L	–	19.5	21.7	25.0	–	34.5	45.5
EHG	A	8.0	10.0	14.0	18.0	22	–	40.0
	e	M7x0.5	M9x0.6	M12x1	M15x1	M18x1	–	M35x1
	L	15.5	19.5	21.7	25.0	30	–	45.5
EPG	A	–	9.0	11.0	–	–	–	–
	L	–	24.8	26.8	–	–	–	–
	M	–	13.2	13.2	–	–	–	–
PHG	A	6.4	9.5	12.5	16.5	19	26.0	36.0
	L	27.0	35.0	40.0	47.0	56	73.0	99.0
PKG	A	8.0	10.0	14.0	18.0	22	28.0	40.0
	e	M7x0.5	M9x0.6	M12x1	M15x1	M18x1	M25x1	M35x1
	L	27.0	35.5	40.5	47.0	56	73.0	99.0
CFF CRG	A	–	13.5	15.0	–	–	–	–
	L	–	37.2	42.5	–	–	–	–
HGG	A	–	13.0	18.0	20.0	25	–	45.0
	e	–	M9x0.6	M12x1	M15x1	M18x1	–	M35x1
	L	–	21.0	24.5	29.5	37	–	52.5

CRG-CFF



HGG



The technical characteristics of the materials used as well as related surface treatments carried out during manufacture of the various components of the series B are to be found at the beginning of this catalogue under 'General Characteristics' (p.3).

Note: All dimensions are in millimetres

Models and series

Model	Multipole Series							Mixed HV+LV Series			Mixed Coax+LV Series			
	00	0B	1B	2B	3B	4B	5B	1B	2B	3B	2B	3B	4B	5B
CFF		●	●											
CRG		●	●											
ECG		●	●	●	●	●		●	●	●	●	●	●	
EEG		●	●	●	●			●	●	●	●	●		
EGG	●	●	●	●	●	●	●	●	●	●	●	●	●	●
EHG	●	●	●	●	●			●	●	●	●	●		
EJG		●	●	●				●	●		●			
ENG		●	●	●		●	●							
EPG [3]	●	●	●											
ESG			●											
EZG	●	●	●	●										
FAG	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FFG		●	●	●										
FGG	●	●	●	●	●	●	●	●	●	●	●	●	●	●
FGG [1]	●	●	●	●	●	●		●	●	●	●	●	●	
FHG		●	●	●	●	●					●			
FNG			●	●	●	●	●	●	●	●	●	●	●	●
FTG [3]		●												
FWG			●											
FZG				●	●	●	●		●	●	●	●	●	●
HCG		●	●	●										
HGG		●	●	●	●		●							
HHG		●	●	●	●									
HNG		●												
PEG						●								
PFG		●	●	●	●	●		●	●	●	●	●	●	
PHG	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PHG [1]	●	●	●	●	●	●		●	●	●	●	●	●	
PKG	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PNG			●	●	●	●	●	●	●	●	●	●	●	●
R●● [2]		●	●	●	●	●								
S●● [2]		●	●	●	●	●	●							
YHG		●	●	●										

Models with collet nut for fitting a strain relief

To order models with a collet nut for fitting a strain relief, add a 'Z' in the variant position of the part number.
The strain reliefs are available in nine colours and several sizes to accommodate different cable outside diameters. They are ordered separately as indicated in the 'Accessories' section.
All other models having a cable collet are also available with a collet nut for fitting a strain relief.

Watertight/Vacuumtight models

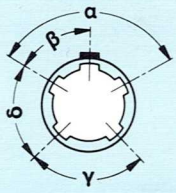
The YH● plug, HG●, HNG, HHG, HCG fixed sockets and S●● coupler allow the device on which they are fitted to reach a protection index of IP66 as per IEC 529 (unmated). They are fully compatible with all non-watertight models of the same series and are widely used for outdoor TV cameras, portable radios, armoured vehicles, ship installations and in aircraft.
Similar technical solutions adopted for the watertight models are used for a vacuumtight version guaranteeing a leakage level of less than 10 - 6 mbar.l.s -1 (as per MIL-STD-1344A standard method 1008).
To seal both the watertight and vacuumtight models, LEMO uses an epoxy resin.

Alignment key and polarized keying system

The connectors of the series B provide extreme safety in use through:
– the alignment key (G) guiding the plug when mating and ensuring that contacts are not subjected to high mechanical loads,
– and the various keying alternatives (code A to M) preventing unwanted crossmating of otherwise similar connectors.
The last letter of the model part number indicates either single key (G letter) or twin keys (A, B, C, D, E, F, J, K, L and M letters). In addition the letters J, K, L and M indicate that plugs are fitted with female contacts and sockets have male contacts.The fixed couplers with nut fixing have a different keying at each end. That at the flange end is indicated by the second letter of the model reference, the other end by the third letter.

● Available
1) Collet nut with strain relief
2) For the complete reference, see tables below
3) For the technical characteristics of these models, see pages 79 and 80

The table below does not apply for EPG-CFF-CRG-FTG models



Model	Angle	Series 00	Series 0B	Series 1B	Angle	Series 2B	Series 3B	Series 4B	Series 5B	Contact type Plug	Contact type Socket	Contact type Coupler[1]	Note
EGG		0°	0°	0°		0°	0°	0°	0°	male	female	female-male	●
EGA		–	30°	30°		30°	30°	30°	30°	male	female	female-male	●
EGB	α	60°	60°	60°	α	45°	45°	45°	45°	male	female	female-male	●
EGC		–	90°	90°		60°	60°	60°	60°	male	female	female-male	●
EGD		–	135°	135°	γ	95°	95°	95°	95°	male	female	female-male	○
EGE	β	–	145°	145°		120°	120°	120°	120°	male	female	female-male	○
EGF		–	155°	155°	β	145°	145°	145°	145°	male	female	female-male	○
EGJ		45°	45°	45°		37.5°	37.5°	37.5°	37.5°	female	male	male-female	●
EGK	γ	–	70°	70°	α	52.5°	52.5°	52.5°	52.5°	female	male	male-female	○
EGL		–	80°	80°	γ	70°	70°	70°	70°	female	male	male-female	○
EGM	δ	–	110°	–		–	–	–	–	female	male	male-female	○

● Available ○ On request

1) The first contact type mentioned is that at the flange end.

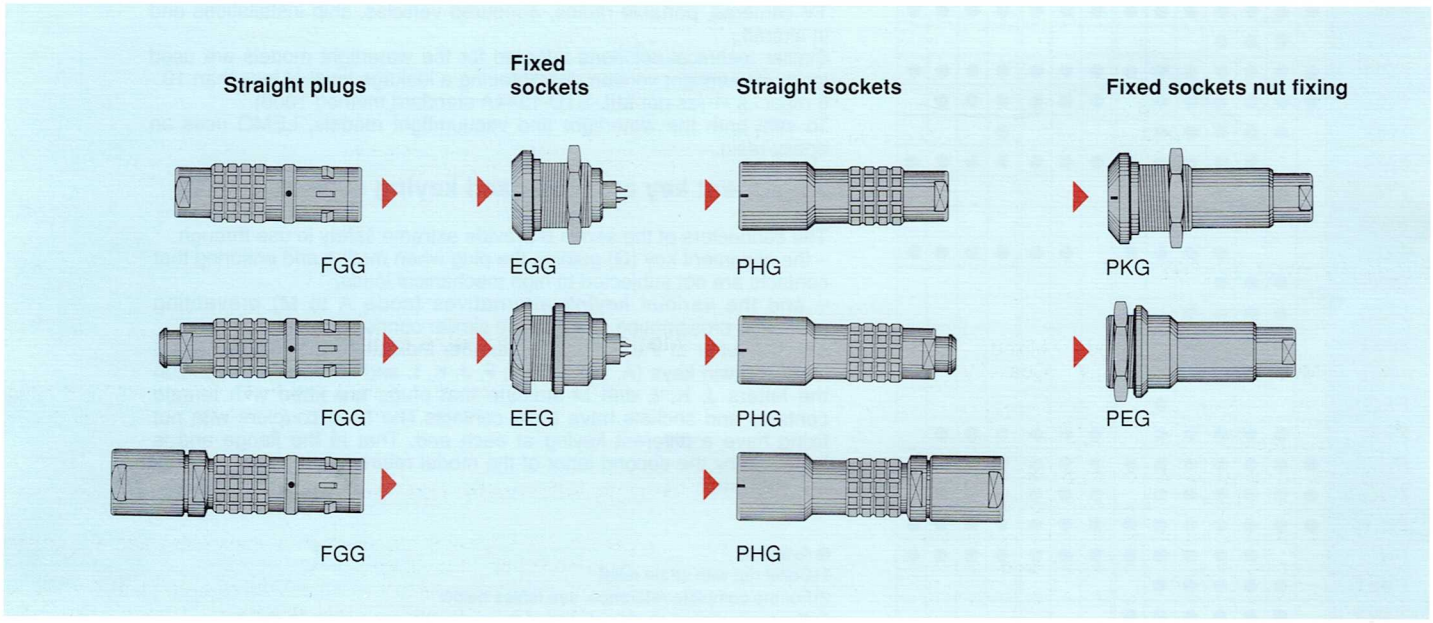
Reference Model	Reference Series	Contacts[1] Number	Contacts[1] Type
RKA-RJB-RKC-RJG	0B	2-3-4-5	male-female
RGJ-RAK-RBL-RGL-RGM			female-male
RGG			female-female
RKA-RJG	1B	3-4-5-6-7	male-female
RGJ			female-male
RGG			female-female
RJG	2B	6-8	male-female
RGJ			female-male
RGJ	3B	8-10-16-18	female-male
RGJ	4B	12-16-20-24-30	female-male

Reference Model	Reference Series	Contacts[1] Number	Contacts[1] Type
SGJ	0B	5	female-male
SGJ	1B	6	female-male
SJG	2B	4-10-18	male-female
SGJ			female-male
SJG	3B	4-10-30	male-female
SGJ			female-male
SJG	4B	30	male-female
SKA-SLB-SJG	5B	20	male-female
SGJ			female-male

Series K

The series K connectors have been specifically designed for outdoor applications.
Their construction is similar to that of the series E, that is to say they include an inner sleeve and two seals to prevent penetration of solids or liquids into the housing formed by the plug, free socket, fixed socket or coupler. All the models of this series are watertight when mated to give a protection index of IP66 as per IEC 529 standard (mated connectors)
Like the series B, the series K connectors have a positioning key to align the plug and socket during mating thus preventing high mechanical loads on the contacts. They can also have a polarized keying system to prevent unwanted cross mating of otherwise similar connectors.

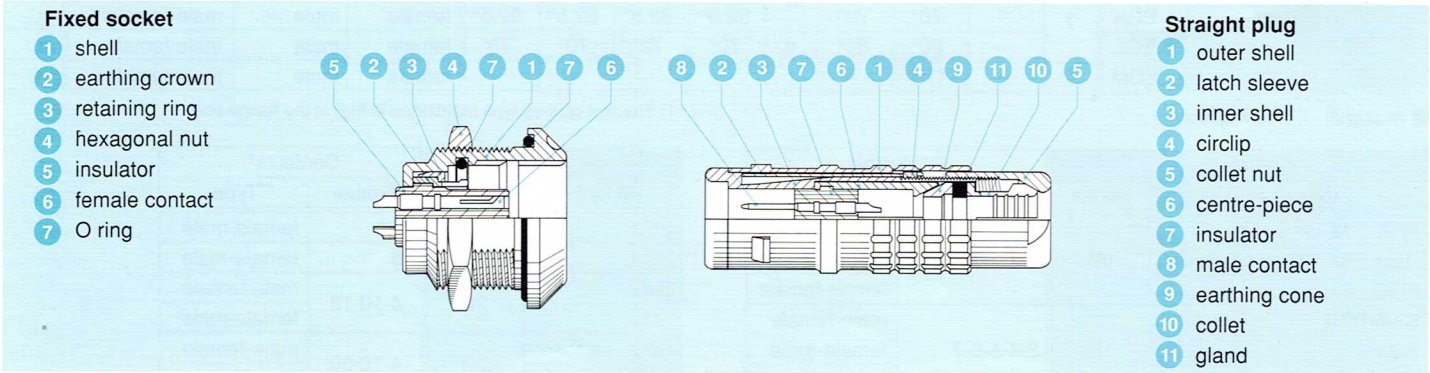
Interconnections



Model description

EGG Fixed socket with nut fixing and key (G) or keys (codes A to F and L)
EEG Fixed socket with nut fixing and key (G) or keys (code A to F and L) (back panel mounting)
FGG Straight plug with key (G) or keys (code A to F and L) and cable collet
FGG Straight plug with key (G) or keys (code A to F and L) and oversize collet
FGG Straight plug with key (G) or keys (code A to F and L), cable collet and nut for fitting a strain relief
PEG Fixed socket, nut fixing, with key (G) and cable collet (back panel mounting)
PHG Free socket with key (G) or keys (code A to F and L) and cable collet
PHG Free socket with key (G) or keys (code A to F and L) and oversize collet
PHG Free socket with key (G) or keys (code A to F and L), cable collet and nut for fitting a strain relief
PKG Fixed socket, nut fixing, with key (G) or keys (code A to F and L) and cable collet

Part section showing internal components

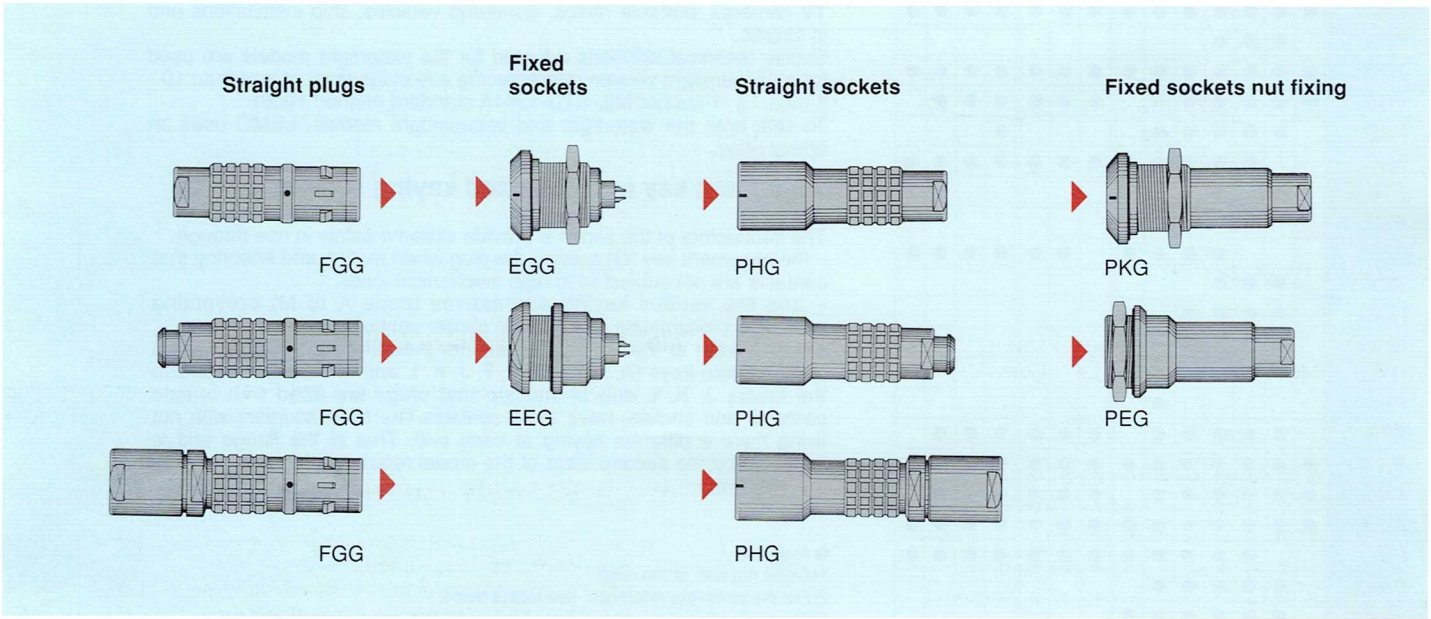


The technical characteristics of the materials used as well as related surface treatments carried out during manufacture of the various components of the series K are to be found at the beginning of this catalogue under 'General Characteristics' (p.3).

Series K

The series K connectors have been specifically designed for outdoor applications.
Their construction is similar to that of the series E, that is to say they include an inner sleeve and two seals to prevent penetration of solids or liquids into the housing formed by the plug, free socket, fixed socket or coupler. All the models of this series are watertight when mated to give a protection index of IP66 as per IEC 529 standard (mated connectors)
Like the series B, the series K connectors have a positioning key to align the plug and socket during mating thus preventing high mechanical loads on the contacts. They can also have a polarized keying system to prevent unwanted cross mating of otherwise similar connectors.

Interconnections

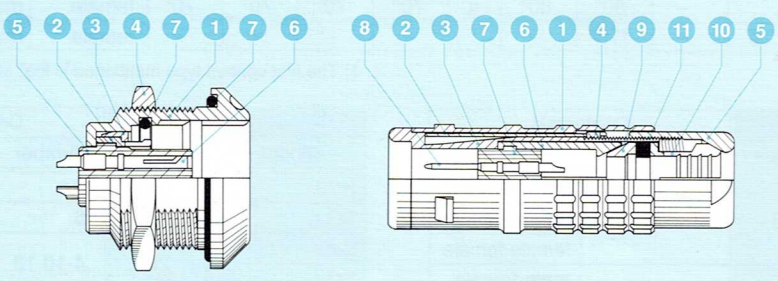


Model description

EGG Fixed socket with nut fixing and key (G) or keys (codes A to F and L)
EEG Fixed socket with nut fixing and key (G) or keys (code A to F and L) (back panel mounting)
FGG Straight plug with key (G) or keys (code A to F and L) and cable collet
FGG Straight plug with key (G) or keys (code A to F and L) and oversize collet
FGG Straight plug with key (G) or keys (code A to F and L), cable collet and nut for fitting a strain relief
PEG Fixed socket, nut fixing, with key (G) and cable collet (back panel mounting)
PHG Free socket with key (G) or keys (code A to F and L) and cable collet
PHG Free socket with key (G) or keys (code A to F and L) and oversize collet
PHG Free socket with key (G) or keys (code A to F and L), cable collet and nut for fitting a strain relief
PKG Fixed socket, nut fixing, with key (G) or keys (code A to F and L) and cable collet

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. retaining ring
4. hexagonal nut
5. insulator
6. female contact
7. O ring

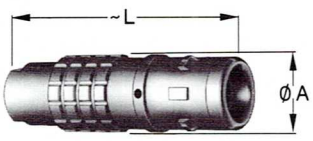


Straight plug
1. outer shell
2. latch sleeve
3. inner shell
4. circlip
5. collet nut
6. centre-piece
7. insulator
8. male contact
9. earthing cone
10. collet
11. gland

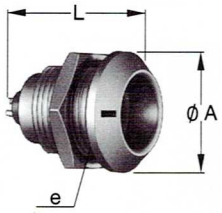
The technical characteristics of the materials used as well as related surface treatments carried out during manufacture of the various components of the series K are to be found at the beginning of this catalogue under 'General Characteristics' (p.3).

Dimensions

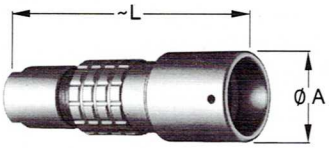
FGG



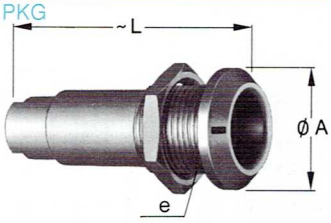
EGG



PHG



PKG



Model	Dim.	Series					
		0K	1K	2K	3K	4K	5K
FGG	A	11	13	16	19.0	25.0	38.0
	L	34	42	52	61.0	71.0	92.0
EGG	A	18	20	25	31.0	37.0	55.0
	e	M14x1	M16x1	M20x1	M24x1	M30x1	M45x1.5
	L	19	26	29	34.5	35.0	44.5
PHG	A	13	15	19	23.0	29.0	42.0
	L	34	45	54	65.0	75.5	95.0
PKG	A	18	20	25	31.0	37.0	54.0
	e	M14x1	M16x1	M20x1	M24x1	M30x1	M45x1.5
	L	34	45	54	65.0	75.5	95.0

Note: All dimensions are in millimetres

Models and series

Model	Multipole						Mixed HV+LV			Mixed Coax+LV			
	Series						Series			Series			
	0K	1K	2K	3K	4K	5K	1K	2K	3K	2K	3K	4K	5K
EGG	●	●	●	●	●	●	●	●	●	●	●	●	●
EEG		●	●	●			●	●	●	●	●		
FGG	●	●	●	●	●	●	●	●	●	●	●	●	●
FGG[1]		●	●	●	●		●	●	●	●	●	●	
FGG[2]	●	●	●	●	●		●	●	●	●	●	●	
PEG	●		●					●		●			
PHG	●	●	●	●	●	●	●	●	●	●	●	●	●
PHG[1]		●	●	●	●		●	●	●	●	●	●	
PHG[2]	●	●	●	●	●		●	●	●	●	●	●	
PKG	●	●	●	●	●	●	●	●	●	●	●	●	●

● Available
1) Oversize collet
2) Collet nut with strain relief

Models with oversize collet

The fitting of oversize collets in FGG and PHG allows them to be fitted to the larger cables that can be accommodated by the next housing size up.

Models with collet nut for fitting a strain relief

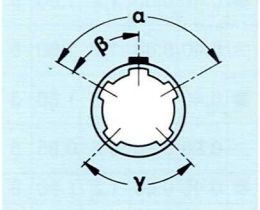
To order models with collet nut for fitting a strain relief, add a 'Z' in the variant position of the part number.
The strain reliefs are available in nine colours and several sizes to accommodate different cable outside diameters. They are ordered separately as indicated in the 'Accessories' section.

All other models having a cable collet are also available with a collet nut for fitting a strain relief.

Alignment key and polarized keying system

The last letter of the model reference indicates either the key (G letter) or keyways (A, B, C, D, E, F and L letters).

In addition the letter L indicates that the plugs are fitted with female contacts and the sockets with male contacts.



Model	Angle	Series						Contact type			Note
		0K	1K	2K	3K	4K	5K	Plug	Socket	Coupler[1]	
EGG		0°	0°	0°	0°	0°	0°	male	female	female-male	●
EGA	α	30°	30°	30°	30°	30°	30°	male	female	female-male	●
EGB		45°	45°	45°	45°	45°	45°	male	female	female-male	●
EGC		60°	60°	60°	60°	60°	60°	male	female	female-male	●
EGD	γ	95°	95°	95°	95°	95°	95°	male	female	female-male	○
EGE	β	120°	120°	120°	120°	120°	120°	male	female	female-male	○
EGF		145°	145°	145°	145°	145°	145°	male	female	female-male	○
EGL	γ	75°	75°	75°	75°	75°	75°	female	male	male-female	○

● Available ○ On request

1) The first contact type mentioned is that at the flange end.

Types (Series B-K)

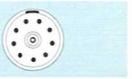
Multipole

Reference	Series	Contact No	Contact Ø (mm)	Types of contact			Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
				Solder	Crimp	Print					
302	00	2	0.5	●			0.35	0.50	1.00	1.50	5.0
303	00	3	0.5	●			0.35	0.50	1.00	1.50	3.0
302	0B-0K	2	0.9	●	●	○	0.46	0.66	1.40	2.00	10.0
303	0B-0K	3	0.9	●	●	○	0.42	0.60	1.30	1.80	8.0
304	0B-0K	4	0.7	●	○	●	0.46	0.66	1.40	2.00	7.0
305	0B-0K	5	0.7	●	○	●	0.26	0.40	0.80	1.20	6.5
306	0B-0K	6	0.5	●			0.22	0.32	0.68	0.96	2.5
307	0B-0K	7	0.5	●			0.22	0.32	0.68	0.96	2.5
302	1B-1K	2	1.3	●	●	○	0.53	0.76	1.60	2.30	15.0
303	1B-1K	3	1.3	●	●	○	0.42	0.60	1.30	1.80	12.0
304	1B-1K	4	0.9	●	●	●	0.63	0.90	1.90	2.70	10.0
305	1B-1K	5	0.9	●	●	●	0.46	0.66	1.40	2.00	9.0
306	1B-1K	6	0.7	●	○	●	0.46	0.66	1.40	2.00	7.0
307	1B-1K	7	0.7	●	○	●	0.46	0.66	1.40	2.00	7.0
308	1B-1K	8	0.7	●	○	●	0.40	0.60	1.20	1.80	5.0
310	1B-1K	10	0.5	●		○	0.20	0.30	0.60	0.90	2.5
302	2B-2K	2	2.0	●	●		0.70	1.00	2.10	3.00	30.0
303	2B-2K	3	1.6	●	●		0.56	0.83	1.70	2.50	17.0
304	2B-2K	4	1.3	●	●	○	1.00	1.30	3.00	4.30	15.0
305	2B-2K	5	1.3	●	●	○	0.86	1.20	2.60	3.70	14.0
306	2B-2K	6	1.3	●	●	○	0.63	0.90	1.90	2.70	12.0
307	2B-2K	7	1.3	●	●	○	0.50	0.73	1.50	2.20	11.0
308	2B-2K	8	0.9	●	●	○	1.00	1.50	3.20	4.50	10.0
310	2B-2K	10	0.9	●	●	○	0.56	0.83	1.70	2.50	8.0
312	2B-2K	12	0.7	●	○	●	0.56	0.83	1.70	2.50	7.0
314	2B-2K	14	0.7	●	○	●	0.56	0.83	1.70	2.50	6.5
316	2B-2K	16	0.7	●	○	●	0.50	0.73	1.50	2.20	6.0
318	2B-2K	18	0.7	●	○	●	0.46	0.66	1.40	2.00	5.5
319	2B-2K	19	0.7	●	○	●	0.46	0.66	1.40	2.00	5.0
302	3B-3K	2	3.0	●			0.76	1.10	2.30	3.30	50.0
303	3B-3K	3	2.0	●	●		1.20	1.60	3.50	5.00	25.0
304	3B-3K	4	2.0	●	●		0.83	1.10	2.50	3.50	22.0
305	3B-3K	5	1.6	●	●		0.86	1.20	2.60	3.70	19.0
306	3B-3K	6	1.6	●	●		0.73	1.00	2.20	3.20	17.0
307	3B-3K	7	1.6	●	●		0.73	1.00	2.20	3.20	15.0
308	3B-3K	8	1.3	●	●		0.70	1.00	2.10	3.00	13.0
309	3B-3K	8 1	1.3 2.0	● ●	● ●		0.40 0.40	0.60 0.60	1.20 1.20	1.80 1.80	6.0 15.0
310	3B-3K	10	1.3	●	●		0.46	0.66	1.40	2.00	12.0
312	3B-3K	12	0.9	●	●	○	0.56	0.83	1.70	2.50	9.0
314	3B-3K	14	0.9	●	●	○	0.56	0.83	1.70	2.50	9.0
316	3B-3K	16	0.9	●	●	○	0.46	0.66	1.40	2.00	8.0
318	3B-3K	18	0.9	●	●	○	0.46	0.66	1.40	2.00	7.0
320	3B-3K	20	0.7	●	○	○	0.50	0.73	1.50	2.20	6.0
322	3B-3K	22	0.7	●	○	○	0.40	0.56	1.20	1.70	5.5
324	3B-3K	24	0.7	●	○	○	0.40	0.56	1.20	1.70	5.0
326	3B-3K	26	0.7	●	○	○	0.26	0.40	0.80	1.20	4.5
330	3B-3K	30	0.7	●	○	○	0.26	0.40	0.80	1.20	3.5
304	4B-4K	4	3.0	●	○		0.93	1.30	2.80	4.00	30.0
306	4B-4K	6	2.0	●	○		0.93	1.30	2.80	4.00	24.0
307	4B-4K	7	2.0	●	○		0.93	1.30	2.80	4.00	20.0
310	4B-4K	10	1.6	●	●		0.70	1.00	2.10	3.00	17.0
312	4B-4K	12	1.3	●	○		1.00	1.40	3.00	4.30	12.0
316	4B-4K	16	0.9	●	●		1.00	1.40	3.00	4.30	10.0
320	4B-4K	20	0.9	●	●		0.70	1.00	2.10	3.00	8.0
324	4B-4K	24	0.9	●	●		0.63	0.90	1.90	2.70	7.0
330	4B-4K	30	0.9	●	●		0.46	0.66	1.40	2.00	5.0
340	4B-4K	40	0.7	●	○		0.56	0.80	1.70	2.40	2.0

Multipole

Reference	Series	Contact No	Contact Ø (mm)	Types of contact			Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
				Solder	Crimp	Print					
304	5B-5K	4	4.0	●	●		2.50	3.5	7.5	10.7	25
310	5B-5K	10	3.0	●	●		1.20	1.8	3.8	5.4	20
314	5B-5K	14	2.0	●	●		1.50	2.1	4.5	6.4	18
316	5B-5K	16	2.0	●	●		1.50	2.1	4.5	6.4	12
320	5B-5K	20	1.6	○	●		1.30	1.8	3.9	5.5	10
330	5B-5K	30	1.3	●	●		1.20	1.7	3.6	5.2	8
340	5B-5K	40	1.3	●	●		0.76	1.1	2.3	3.3	7
348	5B-5K	48	1.3	●	●		0.63	0.9	1.9	2.7	6
350	5B-5K	50	0.9	●	●		0.76	1.1	2.3	3.3	6
354	5B-5K	54	0.9	●	●		0.76	1.1	2.3	3.3	5
364	5B-5K	64	0.9	●	●		0.53	0.7	1.6	2.3	3

Mixed: HV + LV



Reference	Series	High Voltage						Low Voltage					
		Contact No	AWG max.	Us (kV rms)	Us (kV dc)	Ue (kV rms	Ue (kV dc)	Contact No	Ø Cont (mm)	Solder	Crimp	Us (kV rms)	Us (kV dc)	Rated Cur. (A)
731	1B-1K	2	26	2.1	3.0	5.3	7.5	1	1.3	●	●	10.4	0.60	12.0
709	3B-3K	1	22	5.6	8.0	12.7	18.0	9	0.7	●	○	0.4	0.60	5.0
718	3B-3K	1	22	2.0	3.0	5.3	7.5	18	0.7	●	○	0.4	0.60	5.3
740	3B-3K	2	22	5.6	8.0	12.7	18.0	10	0.7	●	○	0.2	0.28	5.0

Mixed: Coaxial + LV, Triaxial + LV

Reference	Series	Coaxial				Low Voltage								
		Contact No	Impedance (Ω)	Type	Cable group	Contact No	Cont. Ø (mm)	Solder	Crimp	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
802	2B-2K	1	50	A1	1-2 3	2	0.9	●	●	0.33	0.50	1.0	1.50	8
804	2B-2K	1	50	A1	1-2 3	4	0.7	●	●	0.40	0.60	1.2	1.80	5
806	2B-2K	1	50	A1	1-2 3	6	0.7	●		0.40	0.60	1.2	1.80	5
806	3B-3K	1	50	A1	1-2 3	6	0.7	●	○	0.40	0.60	1.2	1.80	5
809	3B-3K	1	50	A1	1-2 3	9	0.7	●	○	0.40	0.60	1.2	1.80	5
812	3B-3K	1	50	A1	1-2 3	12	0.9	●	●	0.40	0.60	1.2	1.80	5
813	3B-3K	1	50	A1	1-2 3	13	0.7	●	○	0.40	0.60	1.2	1.80	5
844	3B-3K	2	50	C	1-2 3	4	0.9	●	●	0.40	0.60	1.2	1.80	8
850	3B-3K	2	50	C	1-2 3	10	0.7	●	○	0.20	0.28	0.6	0.85	5
802	4B-4K	1	50	A	6	2	0.9	●	●	0.40	0.60	1.2	1.80	8
804	4B-4K	1	50	A	6	4	0.9	●	●	0.40	0.60	1.2	1.80	7
806	4B-4K	1	50	A	6	6	0.9	●	●	0.40	0.60	1.2	1.80	5
822	4B-4K	1	75	A	4-5 7	2	0.9	●	●	0.40	0.60	1.2	1.80	8
824	4B-4K	1	75	A	4-5 7	4	0.9	●	●	0.40	0.60	1.2	1.80	7
826	4B-4K	1	75	A	4-5 7	6	0.9	●	●	0.40	0.60	1.2	1.80	5

● Available: male and female contacts ○ On request: male and female contacts

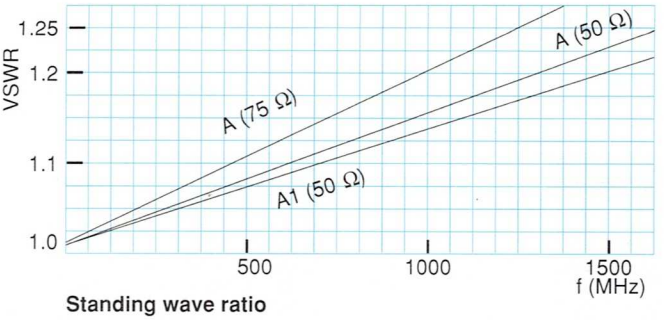
Mixed: Coaxial + LV, Triaxial + LV

Reference	Series	Coaxial				Low Voltage								
		Contact No	Impedance (Ω)	Type	Cable group	Contact No	Cont. Ø (mm)	Solder	Crimp	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
842	4B-4K	2	50	A1	1-2 3	2	0.9	●	●	0.40	0.6	1.2	1.8	8
844	4B-4K	2	50	A1	1-2 3	4	0.9	●	●	0.40	0.6	1.2	1.8	7
852	4B-4K	2	50	C	1-2 3	12	0.9	●	●	0.40	0.6	1.2	1.8	4
856	4B-4K	2	50	C	1-2 3	16	0.9	●	●	0.40	0.6	1.2	1.8	4
858	4B-4K	2	50	C	1-2 3	18	0.7	●		0.50	0.7	1.5	2.1	2
885	4B-4K	3	50	C	1-2 3	12	0.7	●	○	0.30	0.5	1.0	1.5	2
850	5B-5K	2	50	B	1-2 6	10	0.9	●	○	0.5	0.7	1.4	2.0	8
856	5B-5K	2	50	B	1-2 6	16	0.9	○	●	0.5	0.7	1.4	2.0	8
857	5B-5K	2	50	B	1-2 6	2 15	2.0 0.9	○	●	0.5	0.7	1.4	2.0	30
870	5B-5K	2	75	B	3-5	10	0.9	○	●	0.5	0.7	1.4	2.0	8
876	5B-5K	2	75	B	3-5	16	0.9	○	●	0.5	0.7	1.4	2.0	8
877	5B-5K	2	75	B	3-5	15 2	0.9 2.0	○	●	0.5	0.7	1.4	2.0	8
864	5B-5K	2	50	B	1-2 6	24	1.3	●		0.5	0.7	1.5	2.1	8
997	5B-5K	1	75	A	8	32	1.3	●		0.5	0.7	1.5	2.1	8

● Available: male and female contacts
○ On request: male and female contacts

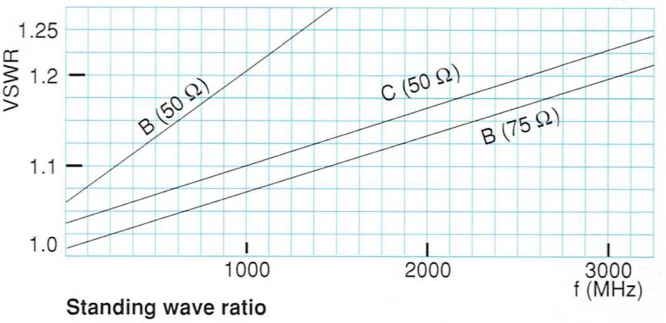
Note:
Test voltage and operating voltage are basic values resulting from tests made with solder contacts.

Technical characteristics of coax contacts



Standing wave ratio

Characteristics	Unit	Type A		Type A1
Impedance	Ω	50	75	50
Operating voltage at 50 Hz	kV rms	0.6	0.8	0.3
Test voltage at 50 Hz	kV rms	1.8	2.3	0.8
Rated current	A	12	7	5
Insulation resistance	Ω	$>10^{12}$	$>10^{12}$	$>10^{12}$
Contact resistance	mΩ	2.0	2.9	3.8
Shell to shell resistance	mΩ	1.8	1.8	3
VSWR(f=GHz)		1.01 +0.146f	1.01 +0.190f	1.01 +0.127f



Standing wave ratio

Characteristics	Unit	Type B		Type C
Impedance	Ω	50	75	50
Operating voltage at 50 Hz	kV rms	0.28	0.7	0.5
Test voltage at 50 Hz	kV rms	0.8	2.1	1.6
Rated current	A	11	6	2
Insulation resistance	Ω	$>10^{12}$	$>10^{12}$	$>10^{12}$
Contact resistance	mΩ	4.1	5.7	5.8
Shell to shell resistance	mΩ	3.2	3.2	3.7
VSWR(f=GHz)		1.06 +0.156f	1.01 +0.063f	1.04 +0.064f

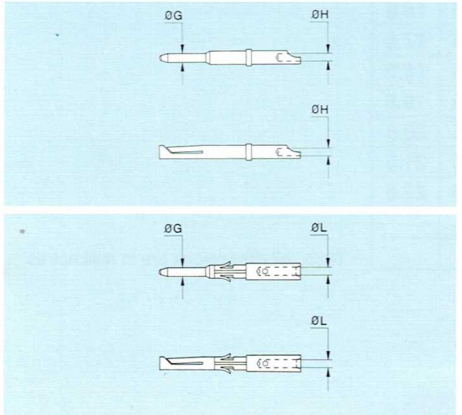
Recommended coaxial and triaxial cables for Mixed Coax + LV types

Group[1]									Type
1	2	3	4	5	6	7	8	9	
						●			RG.6A/U
								●	RG.11A/U
					●				RG.58C/U
				●					RG.59B/U
●									RG.174A/U
	●								RG.178B/U
		●							RG.179B/U

Group[1]								Type
1	2	3	4	5	6	7	8	
			●					RG.180B/U
		●						RG.187A/U
●								RG.188A/U
	●							RG.196A/U
●								RG.316/U
							●	Triaxial

1) The cable group number corresponding to the cable must be written in the variant position of the part number

Low voltage contacts, max. inner conductor diameter



Solder contacts

Contact		Conductor		
		Ø	AWG max.	
ØG	ØH	max.	solid	stranded
0.5	0.4	0.35	28	30
0.7	0.6	0.55	24	26
0.9	0.8	0.75	22	22
1.3	1.0	0.95	20	20
1.6	1.4	1.35	16	18
2.0	1.8	1.75	14	16
3.0	2.7	2.65	14	16
4.0	3.7	3.65	10	10

Note: All dimensions are in millimetres

Crimp Contacts

Contact		Conductor		
		Ø	AWG	
ØG	ØH	max.	min.	max.
0.7	0.8	0.75	26	22
0.9	1.1	1.05	24	20
1.3	1.4	1.35	22	18
1.6	1.9	1.85	18	14
2.0	2.4	2.35	16	12
3.0	3.2	3.15	14	10
4.0	4.0	3.95	12	8

Note:
The variance in conductor strandings which are quoted as being a specific AWG is so large that some can have a cross section which is not sufficient to guarantee a crimp as per the MIL-C-22520/-01 standard.
Our technical department is at your disposal to answer your questions and propose a solution appropriate to your problem.

Collets

(Series B)

Reference		Series	Cable OD	
Type	Ø		max.	min.
D	17	00	1.7	1.1
D	22		2.2	1.6
D	27		2.7	2.1
D	30		3.0	2.5
D	35		3.5	2.9
D	21	0B	2.0	1.5
D	25		2.5	2.1
D	31		3.0	2.1
D	35		3.5	3.0
D	42		4.0	3.1
D	52		5.0	4.1
D	56		5.5	5.1
M	27	1B	2.5	2.0
M	31		3.0	2.1
D	42		4.0	3.1
D	52		5.0	4.1
D	62		6.0	5.1
D	72		7.0	6.1
D	76		7.5	7.1
M	21	2B	2.0	1.5
M	31		3.0	2.1
M	42		4.0	3.1
D	52		5.0	4.1
D	62		6.0	5.1
D	72		7.0	6.1
D	82		8.0	7.1
D	92		9.0	8.1
D	99		9.7	9.1
M	52	3B	5.0	4.1
D	62		6.0	5.1
D	72		7.0	6.1
D	82		8.0	7.1
D	92		9.0	8.1
D	10		10.0	9.1
D	11		11.0	10.1
D	12		11.7	11.1
M	62	4B	6.0	5.1
M	72		7.0	6.1
M	82		8.0	7.1
M	92		9.0	8.1
D	10		10.5	9.1
D	12		12.0	10.6
D	13		13.5	12.1
D	15		15.0	13.6
D	16		16.0	15.1
D	11	5B	11.5	9.6
D	13		13.5	11.6
D	15		15.5	13.6
D	17		17.5	15.6
D	19		19.5	17.6
D	21		21.5	19.6
D	23		23.5	21.6
D	25		25.0	23.6

(Series K)

Reference		Series	Cable OD	
Type	Ø		max.	min.
C	10	0K	1.2	1.0
C	15		1.5	1.3
C	20		2.0	1.6
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		5.0	4.1
C	15	1K	1.5	1.0
C	20		2.0	1.6
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1
K	70		7.0	6.6
K	75		7.5	7.1
K	80		8.0	7.6
K	85		8.5	8.1
C	15	2K	1.7	1.5
C	20		2.0	1.8
C	25		2.5	2.1
C	30		3.0	2.6
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1
C	70		7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
C	90		9.0	8.6
K	90		9.0	8.6
K	95		9.5	9.1
K	10		10.0	9.6
K	11		11.0	10.1
C	30	3K	3.0	2.1
C	35		3.5	3.1
C	40		4.0	3.6
C	45		4.5	4.1
C	50		5.0	4.6
C	55		5.5	5.1
C	60		6.0	5.6
C	65		6.5	6.1

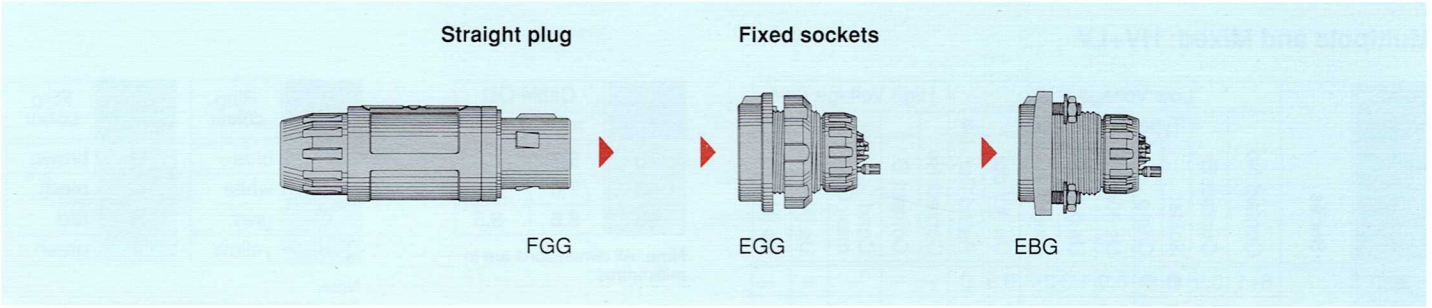
Reference		Series	Cable OD	
Type	Ø		max.	min.
C	70	3K	7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
C	90		9.0	8.6
C	95		9.5	9.1
C	10		10.0	9.6
C	11		11.0	10.1
K	11		11.7	10.6
K	12		12.8	12.1
K	13		13.5	12.9
K	14		14.3	13.6
K	15		15.0	14.4
C	50	4K	5.3	5.1
C	55		5.6	5.4
C	60		6.0	5.7
C	65		6.5	6.1
C	70		7.0	6.6
C	75		7.5	7.1
C	80		8.0	7.6
C	85		8.5	8.1
C	90		9.0	8.6
C	95		9.7	9.1
C	10		10.5	9.8
C	11		11.7	10.6
C	12		12.8	12.1
C	13		13.5	12.9
C	14		14.3	13.6
C	15		15.0	14.4
K	16		16.5	15.6
K	17		17.5	16.6
K	18		18.5	17.6
K	19		19.5	18.6
K	20		20.5	19.6
K	21		21.5	20.6
K	22		22.5	21.6
K	23		23.5	22.6
C	10	5K	10.5	9.6
C	11		11.5	10.6
C	12		12.5	11.6
C	13		13.5	12.6
C	14		14.5	13.6
C	15		15.5	14.6
C	16		16.5	15.6
C	17		17.5	16.6
C	18		18.5	17.6
C	19		19.5	18.6
C	20		20.5	19.6
C	21		21.5	20.6
C	22		22.5	21.6
C	23		23.5	22.6

Note: All dimensions are in millimetres

Series 3P

The series 3P, incorporates most technical features of the series B connectors such as the self-latching system, multiple keying system and crimp or solder contacts.
These connectors were specifically designed for all applications requiring minimum weight, maximum electrical insulation values, together with high thermal and mechanical properties, as well as suitability for either vapour or gas sterilization and for cold sterilization with a chemical product (for example 3M Glutarex).
The series 3P are safety connectors and apart from the contacts utilize non-conductive materials and four different systems to prevent accidental cross mating, i.e. colour coding, insert polarization and both housing and insert keying.

Interconnections



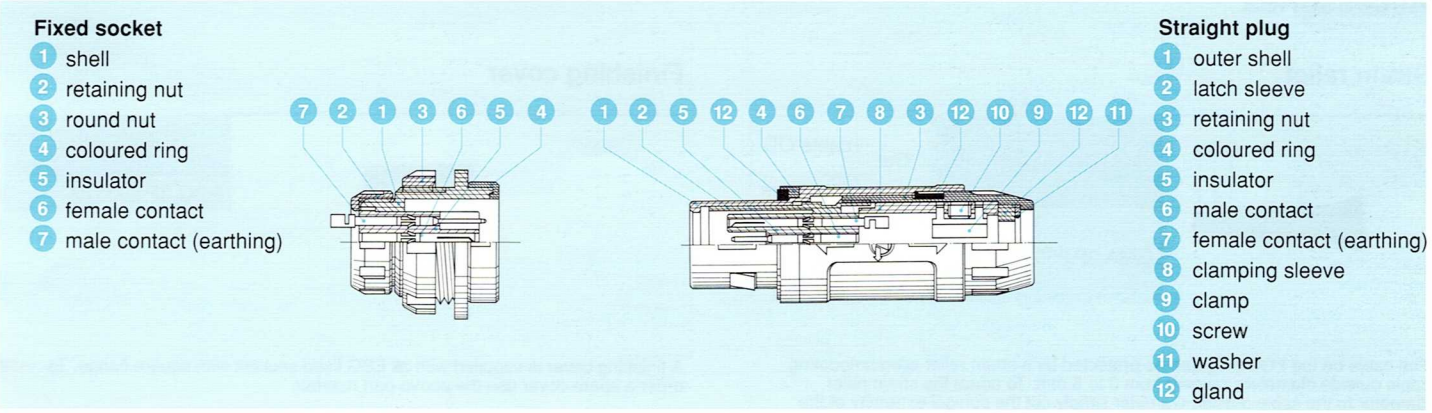
Model description

FGG Straight plug with key and cable gland

EBG Fixed socket with key, square flange (screw fixing)

EGG Fixed socket, nut fixing, with key

Part section showing internal components



Technical characteristics

Material and treatment

Component	Material	Standard
Outer shell, latching sleeve, other parts	Polysulfone (PSU)	MIL-P-46120 MR
Sealing glands	Silicone rubber 70 shore hardness	FS ZZ-R765
Insulator	PEEK	MIL-P-46183

Contact

Component	Material (Standard)	Surface treatment (µm)		
		Cu	Ni	Au
male solder	Brass(ASTM C 385)	0.5	3	0.5
male crimp & male (earthing)	Brass(ASTM C 345)	0.5	3	0.5
female solder and female crimp and female (earthing)	Bronze (ASTM C544)	0.5	3	0.5

The surface treatment standards are as follows:
Nickel FS-QQ-N-290A / Gold MIL-G-45204C type 1, class 00

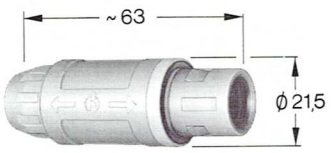
Mechanical, electrical and climatical

Characteristic	Value	Standard	Method
Watertightness (mated connectors)	IP 61	IEC 529	
Cable retention force	> 200 N	MIL-STD-1344A	2009.1
Retention force crimped contacts	> 40 N	MIL-STD-1344A	2007.1
Retention force force fit contacts	> 180 N	MIL-STD-1344A	2007.1
Insulation resistance contact/contact	$>10^{12}$ Ω	MIL-STD-1344A	3003.1
Insulation resistance contact/screen	$>10^{12}$ Ω	MIL-STD-1344A	3003.1
Operating temperature	- 50°C + 150°C (- 58°F + 302°F)		
Sterilization	steam, 130°C (266°F) steam + formol, 70°C (158°F) gas, 60°C (140°F)		

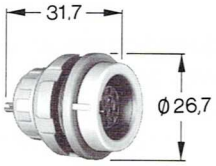
1N = 0.102 kg

Models

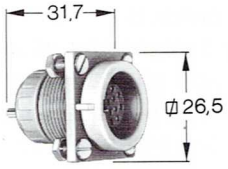
FGG.3P



EGG.3P



EBG.3P



Note: All dimensions are in millimetres

Types

Multipole and Mixed: HV+LV

Reference	Series	Low Voltage (LV)									High Voltage (HV)				
		Contact No	Contact Ø	Type: Solder	Type: Crimp	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)	Contact No	Contact Ø	Cond. max. OD	Us (kV rms)	Us (kV dc)
306	3P	6+1	0.9	●	●	0.9	1.3	2.7	3.9	6	–	–	–	–	–
310		10+1	0.9	●	●	0.8	1.1	2.4	3.3	5	–	–	–	–	–
314		14+1	0.9	●	●	0.4	0.6	1.2	1.7	4	–	–	–	–	–
318		18+1	0.7	●		0.6	0.9	1.9	2.7	3	–	–	–	–	–
709		9+1	0.9	●	●	0.4	0.6	1.2	1.7	4	1	0.9	0.75	5.6	8.0

● Available

Note: All dimensions are in millimetres

Collet

Ref.	Cable OD min.	Cable OD max.
75	6.7	7.5
85	7.6	8.5
95	8.6	9.5

Note: All dimensions are in millimetres

Variant

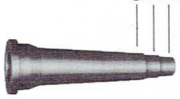
Ref.	Ring colour
A	blue
B	white
G	grey
J	yellow

Ref.	Ring colour
M	brown
N	black
R	red
V	green

Note:
The variant position of the part number is used to specify the colour of the coding ring. The standard colour is grey.

Accessories

Strain relief



Part Number	Cut	cable OD max.	cable OD min.
GMA.3P.050.SN	A	3.9	3
	B	4.9	4
	C	5.9	5

The cable on the FGG plug can be protected by a strain relief accommodating cable outside diameters ranging from 3 to 6 mm. To adapt the strain relief diameter to the cable outside diameter simply cut the conical extremity of the strain relief.

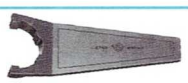
Finishing cover

Part Number
EBG.3P.260.UG

A finishing cover is supplied with all EBG fixed sockets with square flange. To order a spare cover use the above part number.

Tooling

Spanner with notch for securing collet nut



Part Number
DCP.91.019.HN

Spanner for securing the socket nut

Part Number
DCP.91.026.HN

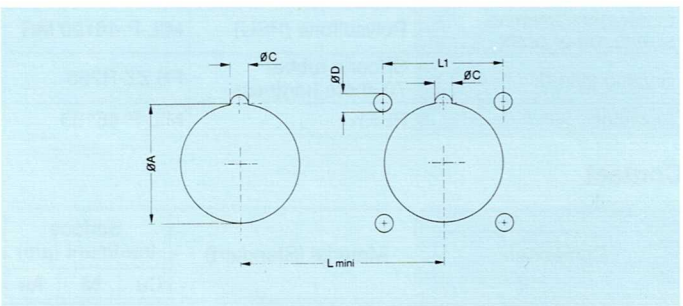
Other accessories as well as tooling are available with the series 3P. Refer to the corresponding section.

Note: All dimensions are in millimetres

1N = 0.102 kg

Cut-out and Torque for collet nut

Panel cut-out



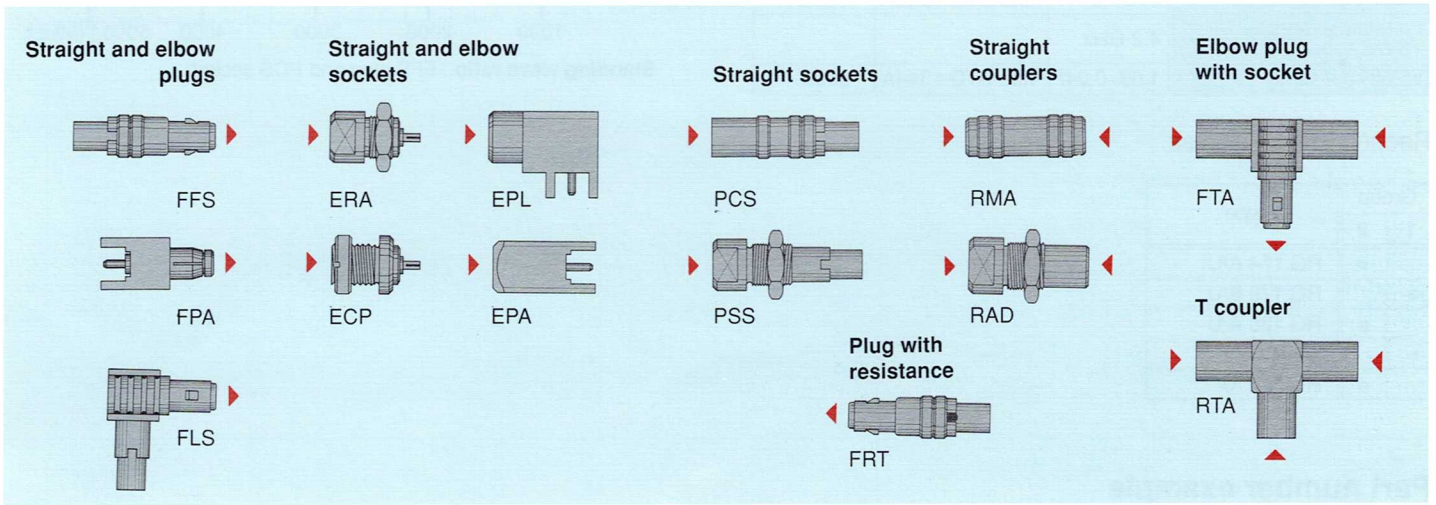
Model	Dimensions A	C	D	L	L1
EGG	20.1	3	–	34	–
EBG	20.1	3	3.1 or M3	31	20

Component	Torque (Nm)
Panel nut	2.3
Insert nut	1.2
Fixing screw	2.5

Series 01 (Minax)

The plugs and sockets of the series 01 are amongst the smallest available 50 Ω coax connectors with a self-latching intermating capability. In spite of their small size and light weight, their technical characteristics remain excellent. Available in a wide range of housing configurations, they are especially useful when connecting onto printed circuit boards.

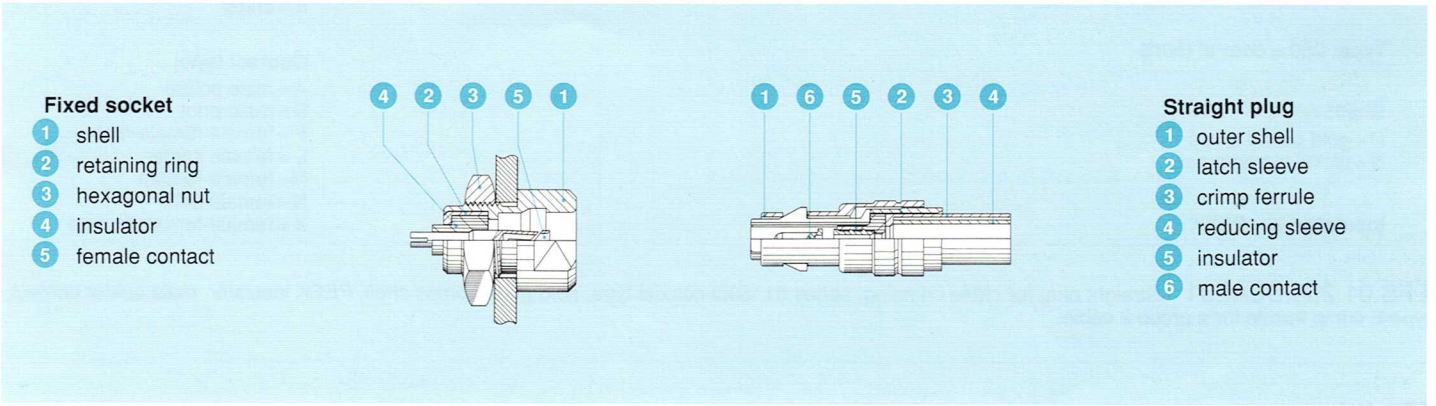
Interconnections



Model description

ABA Adapter from LEMO socket to BNC plug UG88/U type
ECP Fixed socket, nut fixing, non-latching (back panel mounting)
EPA Fixed socket for printed circuit
EPL Elbow socket (90°) for printed circuit
ERA Fixed socket, nut fixing
FFS Straight plug for cable crimping
FLS Elbow plug (90°) for cable crimping
FPA Straight plug, non-latching, for printed circuit
FRT Straight plug with resistor
FTA T-plug with two sockets in line
PCS Free socket for cable crimping
PSS Fixed socket, nut fixing, for cable crimping
RAD Fixed coupler, nut fixing
RMA Free coupler
RTA T-coupler with three sockets

Part section showing internal components



Technical characteristics

Material and treatment

Components	Material (Standard)	Surface treat.(µm)		
		Cu	Ni	Au
Outer shell	Brass(ASTM C 385)	0.5	3	0.5[1)]
Inner latch sleeve	Cu-Be (FS-QQ-C-530)	0.5	3	1.5
Retaing ring	Brass (ASTM C 385)	0.5	3	
Reducing sleeve	Brass (ASTM C 385)	0.5	3	0.5[1)]
Crimp ferrule	Brass (ASTM C 345)	0.5	3	0.5[1)]
Insulator	PEEK (MIL-P-46183)			
Male contact	Brass (ASTM C 385)	0.5	3	1.5
Female contact	Bronze (ASTM C 544)	0.5	3	2.0

Mechanical and climatical

Characteristics	Value	Standard	Method
Contact retention force	> 60 N	MIL-STD-1344A	2007.1
Cable retention force	>100 N	MIL-STD-1344A	2009.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Operating temp.	– 55°C +230°C (– 67°F +446°F)		

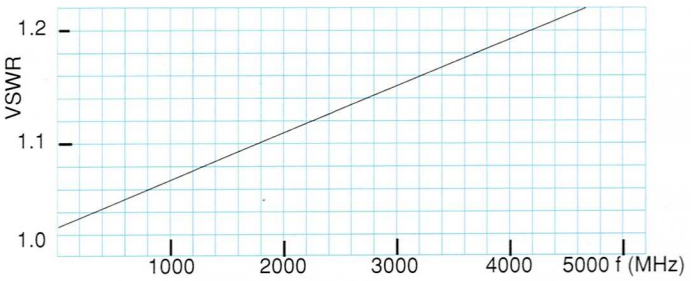
1N = 0.102 kg

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26074C grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1

1) Gold MIL-G-45204C type I, class 00

Electrical

Characteristics	Value	Standard	Method
Impedance	50 Ω		
Operating voltage at 50Hz	0.3 kV rms	IEC 130-1	§14.5
Test voltage at 50Hz	1.0 kV rms	MIL-STD-1344A	3001.1
Rated current	4 A	IEC 512-3	
Contact resistance	< 6 mΩ	MIL-STD-202	307
Insulation resistance	$>10^{12}\Omega$	MIL-STD-1344A	3003.1
Frequency range VSWR <. 1.2	4.2 GHz		
VSWR (f = GHz)	1.03+0.04f	MIL-STD-1344A	3005



Standing wave ratio : FFS plug and PCS socket

Recommended cables

Group 1	Group 2	Type
	●	RG.174 A/U
●		RG.178 B/U
	●	RG.188 A/U
●		RG.196 A/U
	●	RG.316 /U

Part number example

FFS	01	250	D	L	A	E	31

Model: page 26–27

Series: 01

Type: 250 = coaxial (50Ω)

Shell:
D = gold plated brass
N = nickel plated brass

Insulator: L = PEEK

Ø Crimp ferrule

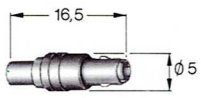
Cable fixing type
E = crimp

Contact type:
A = male solder
D = male print
F = female-female-male
L = female solder
M = female-female
N = female print
X = female-female-female

FFS.01.250.DLAE31 Straight plug for cable crimping, series 01, 50Ω coaxial type, gold plated brass shell, PEEK insulator, male solder contact, type E crimp ferrule for a group 2 cable.

Models

FFS

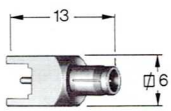


Part Number	Cable group
FFS.01.250.DLAE24	1
FFS.01.250.DLAE31	2

FLS

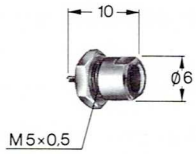
Part Number	Cable group
FLS.01.250.DLAE24	1
FLS.01.250.DLAE31	2

FPA



Part Number	Weight (g)
FPA.01.250.DLD	1.4

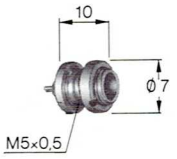
ERA



Part Number	Weight (g)
ERA.01.250.DLL	1.3

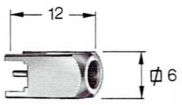
Note: All dimensions are in millimetres

ECP



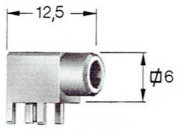
Part Number	Weight (g)
ECP.01.250.DLL	1.3

EPA



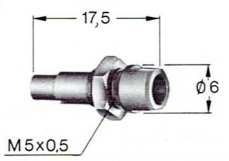
Part Number	Weight (g)
EPA.01.250.DLN	2

EPL



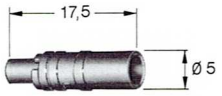
Part Number	Weight (g)
EPL.01.250.DLN	3.2

PSS



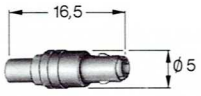
Part Number	Cable group
PSS.01.250.DLLE24	1
PSS.01.250.DLLE31	2

PCS



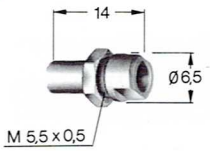
Part Number	Cable group
PCS.01.250.DLLE24	1
PCS.01.250.DLLE31	2

FRT



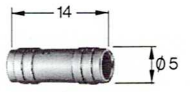
Part Number	Weight (g)
FRT.01.250.DLA50	2.5

RAD



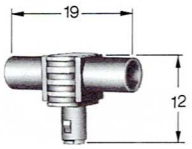
Part Number	Weight (g)
RAD.01.250.DLM	1.8

RMA



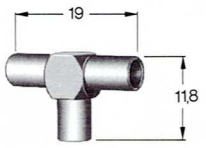
Part Number	Weight (g)
RMA.01.250.DLM	1.1

FTA



Part Number	Weight (g)
FTA.01.250.DLF	2.5

RTA



Part Number	Weight (g)
RTA.01.250.DLX	2.4

ABA

Part Number	Weight (g)
ABA.01.250.NLL	18.2

Note: All dimensions are in millimetres

Accessories and tooling

Hexagonal nut

Part Number	e (mm)	Weight (g)
GEA.01.240.LN	M5.0x0.5	0.7
GEA.01.241.LN	M5.5x0.5	1.0

Round nut

Part Number	e (mm)	Weight (g)
GEB.01.240.LN	M5x0.5	1.0

Crimp ferrule

Cable group	Part Number	
	Crimp ferrule	Reducer
1	FFS.01.150.MA	FFS.01.160.LA
2	FFS.01.150.MA	–

All models for cable crimping are supplied with a crimp ferrule.The fixed sockets are all supplied with a hexagonal nut.
To order these accessories separately, please use the above mentioned part numbers.

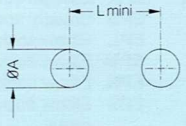
Crimping tool with dies

Part Number
DPA.99.003.0K

Note: All dimensions are in millimetres

Cut-out

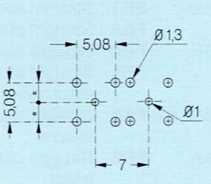
Panel cut-outs



Model	Dim.	
	A	L
ERA-ECP PSS	5.1	9.5
RAD	5.6	10.0

Torque: 1.5 Nm
1N = 0.102 Kg

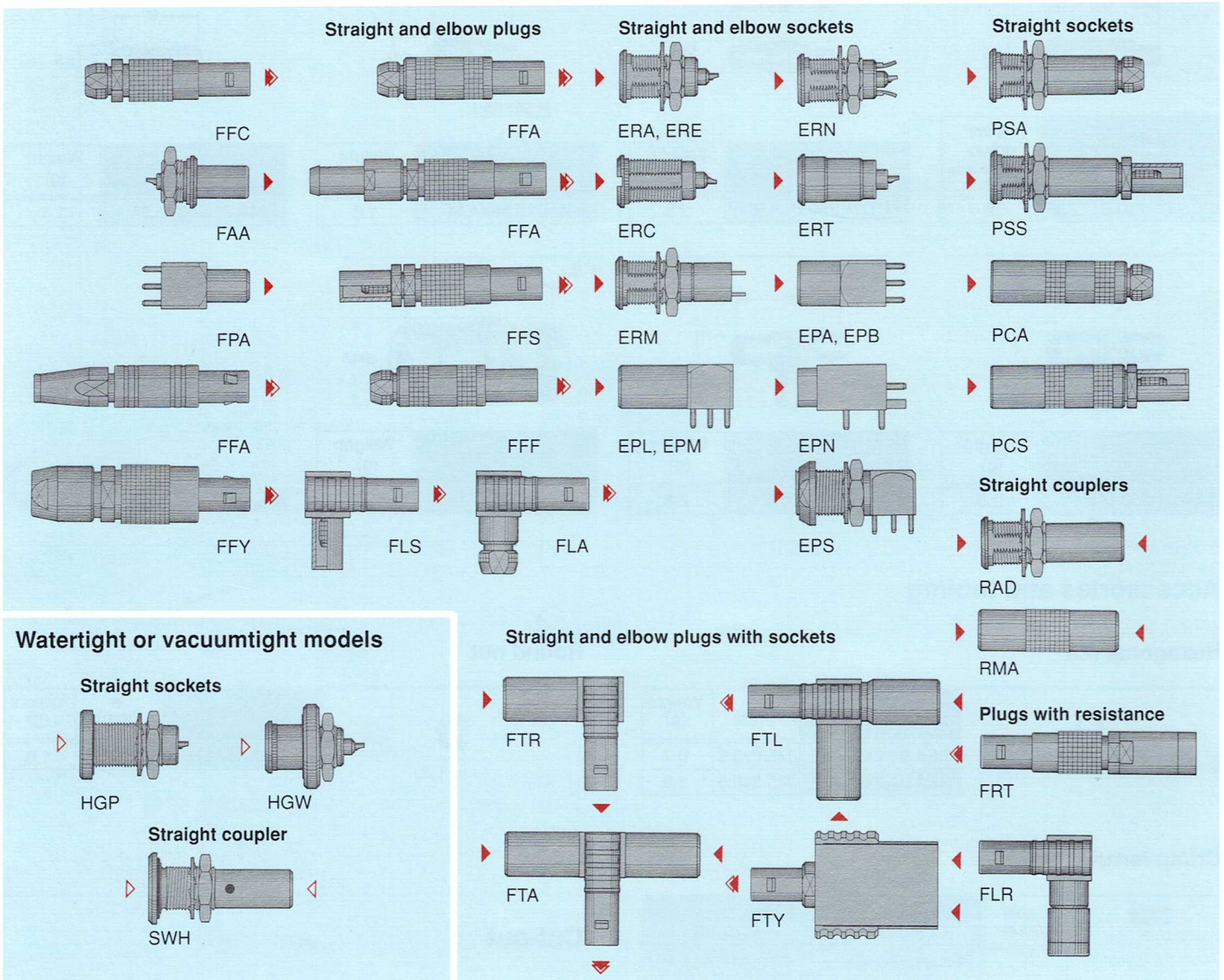
PCB drilling pattern



Series 00

The series 00 is coaxial (50 Ω). This connector family was conceived for all applications where a high density of connectors is necessary, especially for patch panels. Because of LEMO's special self-latching system, it is possible to connect them with a simple axial push-pull thereby reducing the space needed to mount sockets to an absolute minimum, up to 50 sockets per square decimetre. These connectors have very rugged outershells as well as a pleasing aesthetic appearance and very secure coupling. LEMO 00 connectors served as the norm for NIM-CAMAC-CD/N549, used in nuclear physics as well as many other applications. They are available in a wide range of housing configurations to meet virtually every connection needed in a wide variety of applications.

Interconnections



Model Description

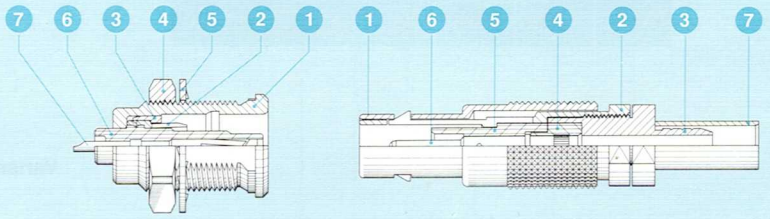
ABA Adapter from LEMO socket to BNC plug UG-88/U type
ABB Adapter from LEMO socket to BNC socket UG-657/U type
ABC Adapter from LEMO socket to BNC socket UG-89/U type
ABD Adapter from LEMO socket to BNC socket UG-909B/U type
ABF Adapter from LEMO plug to BNC socket UG89/U type
ACA Adapter from LEMO socket to C plug UG-709B/U type
ACB Adapter from LEMO socket to C plug UG-572A/U type
AGG Adapter from LEMO socket to socket General-Radio 874 type
AGH Adapter from LEMO socket to UHF plug
ANA Adapter from LEMO socket to N plug UG-536B/U type
ANB Adapter from LEMO socket to N plug UG-23B/U type

EPA Straight socket for printed circuit
EPB Straight socket for printed circuit (long studs)
EPL Elbow socket (90°) for printed circuit
EPM Elbow socket (90°) for printed circuit (long studs)
EPN Elbow socket (90°) for printed circuit, force fit
EPS Elbow socket (90°) with two nuts for printed circuit
ERA Fixed socket, nut fixing
ERC Fixed socket, nut fixing, with slot in flange
ERE Fixed socket, nut fixing, with conical lead in
ERM Fixed socket, nut fixing, with microswitch
ERN Fixed socket, nut fixing, with tags
ERT Straight socket, force or adhesive fit
FAA Straight plug, non-latching, nut fixing
FFA Straight plug with cable collet
FFA Straight plug with cable collet and nut for fitting a strain relief
FFA Straight plug with cable collet, PEEK release sleeve
FFC Straight plug with flats on latch sleeve and cable collet

FFF Straight plug, non-latching, with cable collet
FFS Straight plug for cable crimping
FFY Straight plug with cable collet (for RG.58 C/U)
FLA Elbow plug (90°) with cable collet
FLR Elbow plug (90°) with resistor or shorted
FLS Elbow plug (90°) for cable crimping
FPA Straight plug, non-latching, for printed circuit
FRT Straight plug with resistor or shorted
FTA T-plug with two sockets in line
FTL T-plug with two sockets (90°)
FTR Elbow plug (90°) with one socket
FTY Straight plug with two parallel sockets
HGP Fixed socket, nut fixing, watertight
HGW Fixed socket, nut fixing, with rear sealing ring
PCA Free socket with cable collet
PCS Free socket for cable crimping
PSA Fixed socket, nut fixing, with cable collet
PSS Fixed socket, nut fixing, for cable crimping
RAD Fixed coupler, nut fixing
RMA Free coupler
SWH Fixed coupler, nut fixing, watertight

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. retaining ring
4. hexagonal nut
5. locking washer
6. insulator
7. female contact



Straight plug
1. outer shell
2. latch sleeve
3. crimp backnut
4. rear insulator
5. front insulator
6. male contact
7. crimp ferrule

Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)							
		Chrome[1]			Nickel		Gold plated		
		Cu	Ni	Cr	Cu	Ni	Cu	Ni	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	0.5	3	0.5	3	0.5[2]
	Aluminium alloy (AA 6262)	anodized[3]							
	PEEK [4]	colour: light brown							
Earthing crown	Cu-Be (FS-QQ-C-530)	0.5	3		0.5	3	0.5	3	1.5
Latching sleeve	Special Brass	0.5	3		0.5	3	0.5	3	1.5
Crimp ferrule	Cu (ASTM C 187)	0.5	3		0.5	3	0.5	3	1.5
	Brass (ASTM C 345)	0.5	3		0.5	3	0.5	3	0.5[2]
Locking washer	Bronze (ASTM C 521)	0.5	3		0.5	3	0.5	3	0.5[2]
Other metallic parts	Brass (ASTM C 385)	0.5	3		0.5	3	0.5	3	0.5[2]
Insulator and insulating sleeve	PTFE (ASTM D 1457-83)								
	PEEK (MIL-P-46183)								
	PEhd								
Male crimp contact	Brass (ASTM C 345)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm							
Male solder contact	Brass (ASTM C 385)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm							
Female contact	Bronze (ASTM C 544)	Cu: 0.5 µm + Ni: 3 µm + Au: 2.0 µm							

The surface treatment are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26078C, grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

1) Standard surface treatment except for printed circuit models which are nickel plated
2) Gold MIL-G-45204C type I, class 00.
3) For anodizing colours refer to the table below
4) For straight plugs only

Mechanical and climatical

Characteristics	Value	Standard	Method
Contact retention force	> 18 N	MIL-STD-1344A	2007.1
Cable retention force	> 100 N	MIL-STD-1344A	2009.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Temperature range	– 55°C + 260°C (– 67°F + 500°F)		

1N = 0.102 kg

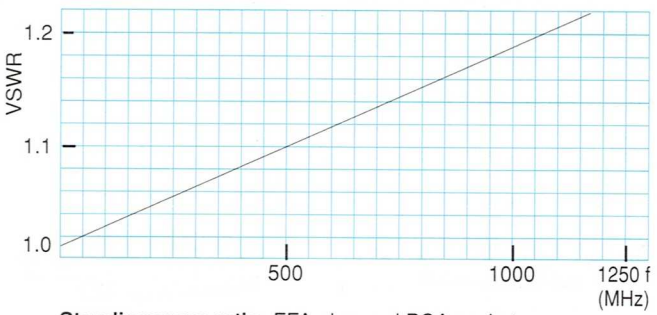
Electrical

Characteristics	Value	Standard	Method
Impedance	50 Ω		
Operating voltage (50Hz)	0.7 kV rms	IEC 130-1	§ 14.5
Test voltage (50Hz)	2.1 kV rms	MIL-STD-1344A	3001.1
Rated current	4 A	IEC 512-3	
Contact resistance	< 6 mΩ	MIL-STD-202	307
Insulating resistance	$>10^{12}$ Ω	MIL-STD-1344A	3003.1
VSWR (f in GHz)	1.01+0.18f	MIL-STD-1344A	3005

Recommended cables

Group 1	2	3	4	5	6	Type
					●	RG.58 C/U
		●				RG.174 A/U
●						RG.178 B/U
	●					RG.179 B/U
				●		RG.180 B/U
	●					RG.187 A/U

Group 1	2	3	4	Type
			●	RG.188 A/U
●				RG.196 A/U
			●	RG.316 /U
		●		CCE.99.281.505 LEMO
		●		CCH.99.281.505 LEMO
		●		HF.2114 Dätwyler



Standing wave ratio: FFA plug and PCA socket

Ref.	Colour
A	bleu
J	yellow
N	black

Ref.	Colour
R	red
T	natural
V	green

Anodizing colours of aluminium connectors

When ordering a connector with an aluminium outer shell, anodizing colour has to be mentioned in the variant position of the part number according to the adjacent table.

Part number example

FFA	00	250	C	T	A	C	29	

Model: page 30–32

Series: 00

Type: 250 = coaxial (50Ω)

Housing:
C = chrome plated brass
N = nickel plated brass
D = gold plated brass
K = black chrome plated brass
L = aluminium alloy[1)]
G = PEEK[2)]

Insulator:
T = PTFE
L = PEEK
P = PEhd

Variant[3)]

Ø Collet or crimp ferrule

Cable fixing type:
C = cable collet
E = crimp
D = cable collet and oversize cable collet

Contact type:
A = male-female
A = male solder
C = male crimp
D = male print
F = female-female-male
L = female solder
L = female-male
M = female-female
M = female crimp
N = female print

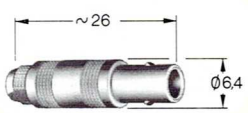
FFA.00.250.CTAC29 Straight plug with cable collet, series 00, 50Ω coaxial type, chrome plated brass housing, PTFE insulator, male solder contact, C type collet of 2.9mm diameter

Note:
All plugs are fitted with a male contact and all sockets and couplers a female contact of the type indicated in the part number example. However the FFA, FFC, FFF, ERA, ERE, ERN, ERT and ERM models can be fitted either with male or female contacts.

1) For anodizing colour refer to the table on page 29
2) For FFA model only (colours on request)
3) The variant of the part number is used to indicate the anodizing colour of aluminium alloy housing, the colour of the PEEK housing or that the connector is fitted with a collet nut for fitting a cable strain relief Z. The strain relief is to be ordered separately as indicated in "Accessories" section.

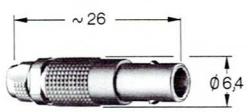
Models

FFA



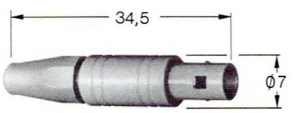
Part Number	Cable group
FFA.00.250.CTAC22	1
FFA.00.250.CTAC29	2-3-4

FFC



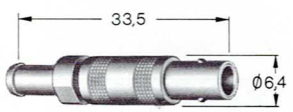
Part Number	Cable group
FFC.00.250.CTAC22	1
FFC.00.250.CTAC27	2-4
FFC.00.250.CTAC31	3
FFC.00.250.CTAD42	5
FFC.00.250.CTAD52	6

FFA



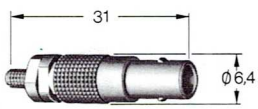
Part Number	Cable group
FFA.00.250.GTAC22	1
FFA.00.250.GTAC29	2-3-4

FFA



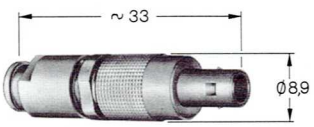
Part Number	Cable group
FFA.00.250.CTAC22Z	1
FFA.00.250.CTAC29Z	2-3-4

FFS



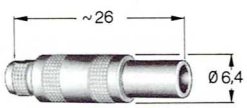
Part Number	Cable group
FFS.00.250.CTCE24	1
FFS.00.250.CTCE30	2
FFS.00.250.CTCE31	3-4
FFS.00.250.CTCE44	5
FFS.00.250.CTCE52	6

FFY



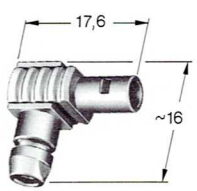
Part Number	Cable group
FFY.00.250.CTAC52Z	6

FFF



Part Number	Cable group
FFF.00.250.CTAC22	1
FFF.00.250.CTAC29	2-3-4

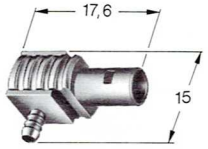
FLA



Part Number	Cable group
FLA.00.250.CTAC22	1
FLA.00.250.CTAC27	2-4
FLA.00.250.CTAC31	3

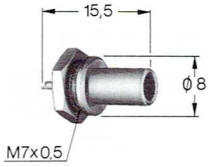
Note: All dimensions are in millimetres

FLS



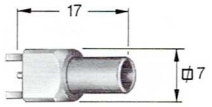
Part Number	Cable group
FLS.00.250.CTAE31	2-3-4
FLS.00.250.CTAE52	6

FAA



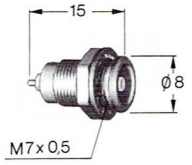
Part Number	Weight (g)
FAA.00.250.NTA	2.5

FPA



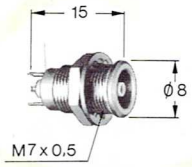
Part Number	Weight (g)
FPA.00.250.NTD	3.2

ERA



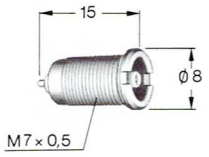
Part Number	Weight (g)
ERA.00.250.CTL	2.8

ERN



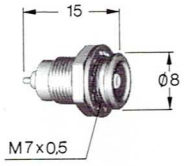
Part Number	Weight (g)
ERN.00.250.CTL	2.8

ERC



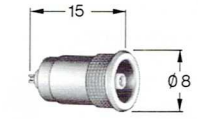
Part Number	Weight (g)
ERC.00.250.CTL	2.8

ERE



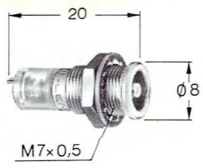
Part Number	Weight (g)
ERE.00.250.CTL	2.8

ERT



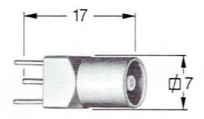
Part Number	Weight (g)
ERT.00.250.CTL	2.2

ERM



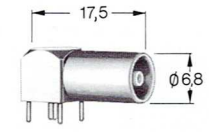
Part Number	Weight (g)
ERM.00.250.CTL	3.0

EPA



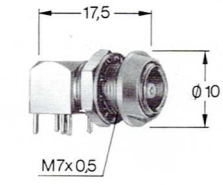
Part Number	Weight (g)
EPA.00.250.NTN	3.4

EPL



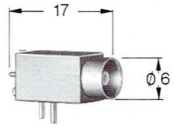
Part Number	Weight (g)
EPL.00.250.NTN	4.3

EPS



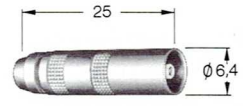
Part Number	Weight (g)
EPS.00.250.NTN	5.4

EPN



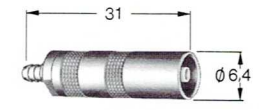
Part Number	Weight (g)
EPN.00.250.NTN	3.6

PCA



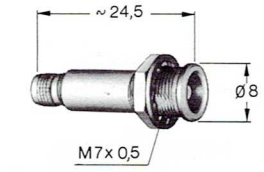
Part Number	Cable group
PCA.00.250.CTLC22	1
PCA.00.250.CTLC29	2-3-4
PCA.00.250.CTLD42	5
PCA.00.250.CTLD52	6

PCS



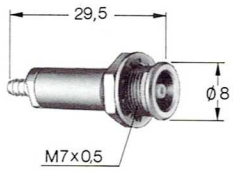
Part Number	Cable group
PCS.00.250.CTME24	1
PCS.00.250.CTME30	2
PCS.00.250.CTME31	3-4
PCS.00.250.CTME44	5
PCS.00.250.CTME52	6

PSA



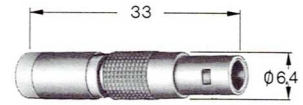
Part Number	Cable group
PSA.00.250.CTLC22	1
PSA.00.250.CTLC29	2-3-4

PSS



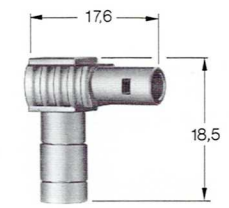
Part Number	Cable group
PSS.00.250.CTME24	1
PSS.00.250.CTME30	2
PSS.00.250.CTME31	3-4

FRT



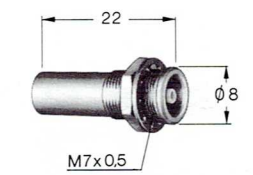
Part Number	Weight (g)
FRT.00.250.CTA50	4.4
FRT.00.250.CTA100	4.4
FRT.00.250.CTA00	4.0

FLR



Part Number	Weight (g)
FLR.00.250.NTA50	5.6
FLR.00.250.NTA100	5.6
FLR.00.250.NTA00	5.2

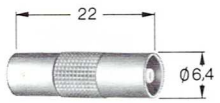
RAD



Part Number	Weight (g)
RAD.00.250.CTM	3.8

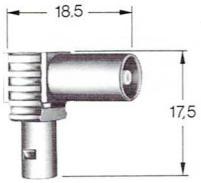
Note: All dimensions are in millimetres

RMA



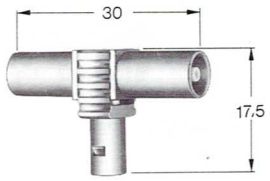
Part Number	Weight (g)
RMA.00.250.CTM	2.7

FTR



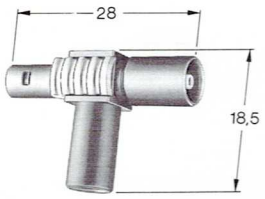
Part Number	Weight (g)
FTR.00.250.CTA	5.4

FTA



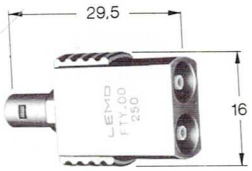
Part Number	Weight (g)
FTA.00.250.CTF	7.8

FTL



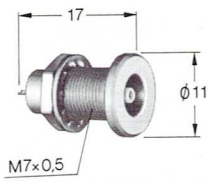
Part Number	Weight (g)
FTL.00.250.CTF	7.1

FTY



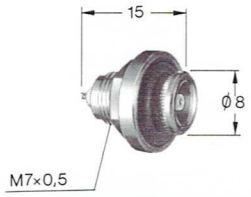
Part Number	Weight (g)
FTY.00.250.CTF	12.5

HGP



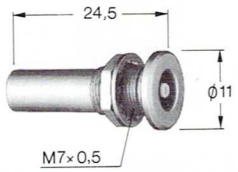
Part Number	Weight (g)
HGP.00.250.CTLP	4.2

HGW



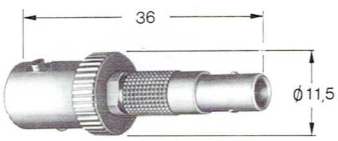
Part Number	Weight (g)
HGW.00.250.CTLP	4.2

SWH



Part Number	Weight (g)
SWH.00.250.CTMV	5.2

ABF

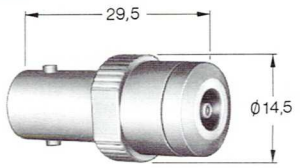


Part Number	Weight (g)
ABF.00.250.CTA	8.3

ABA

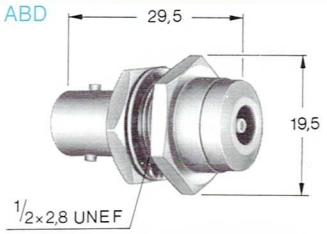
Part Number	Weight (g)
ABA.00.250.NTL	18.7

ABC



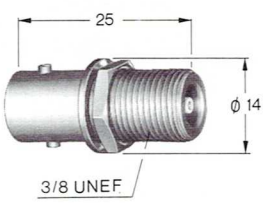
Part Number	Weight (g)
ABC.00.250.NTM	17

ABD



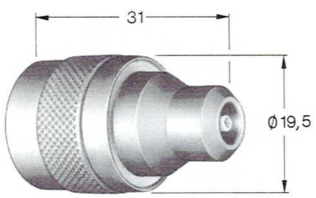
Part Number	Weight (g)
ABD.00.250.NTM	21.4

ABB



Part Number	Weight (g)
ABB.00.250.NTM	9.4

ACA

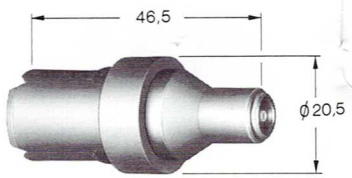


Part Number	Weight (g)
ACA.00.250.NTL	32

ACB

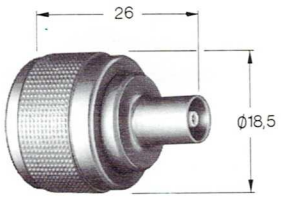
Part Number	Weight (g)
ACB.00.250.NTM	50.3

AGG



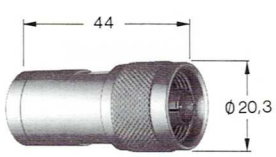
Part Number	Weight (g)
AGG.00.250.CTM	20

AGH



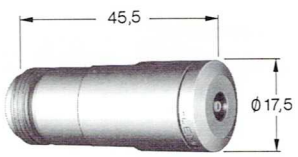
Part Number	Weight (g)
AGH.00.250.NTL	13.8

ANA



Part Number	Weight (g)
ANA.00.250.NTL	38

ANB



Part Number	Weight (g)
ANB.00.250.NTM	61.7

The above mentioned part numbers correspond to standard production models. Other variations are also available and can be ordered using the 'Part Number Example' table.

Note: All dimensions are in millimetres

Cable assemblies

MFB Model

MSB Model

Part Number	Delay (ns)	Part Number
MFB.00.250.RTE005	0.5	MSB.00.250.RTE005
MFB.00.250.RTE010	1.0	MSB.00.250.RTE010
MFB.00.250.RTE020	2.0	MSB.00.250.RTE020
MFB.00.250.RTE030	3.0	MSB.00.250.RTE030
MFB.00.250.RTE040	4.0	MSB.00.250.RTE040
MFB.00.250.RTE050	5.0	MSB.00.250.RTE050
MFB.00.250.RTE060	6.0	MSB.00.250.RTE060
MFB.00.250.RTE080	8.0	MSB.00.250.RTE080
MFB.00.250.RTE100	10.0	MSB.00.250.RTE100
MFB.00.250.RTE160	16.0	MSB.00.250.RTE160
MFB.00.250.RTE200	20.0	MSB.00.250.RTE200
MFB.00.250.RTE320	32.0	MSB.00.250.RTE320
MFB.00.250.RTE640	64.0	MSB.00.250.RTE640

Part Number	Length (cm)	Part Number
MFB.00.250.LTE010	10	MSB.00.250.LTE010
MFB.00.250.LTE020	20	MSB.00.250.LTE020
MFB.00.250.LTE030	30	MSB.00.250.LTE030
MFB.00.250.LTE040	40	MSB.00.250.LTE040
MFB.00.250.LTE050	50	MSB.00.250.LTE050
MFB.00.250.LTE060	60	MSB.00.250.LTE060
MFB.00.250.LTE080	80	MSB.00.250.LTE080
MFB.00.250.LTE100	100	MSB.00.250.LTE100
MFB.00.250.LTE150	150	MSB.00.250.LTE150
MFB.00.250.LTE200	200	MSB.00.250.LTE200
MFB.00.250.LTE300	300	MSB.00.250.LTE300
MFB.00.250.LTE400	400	MSB.00.250.LTE400
MFB.00.250.LTE500	500	MSB.00.250.LTE500

The standard cable used to manufacture these cable assemblies is CCE.99.281.505 (LEMO) as per IEC.50.2.1 standard. On request this type of cable can be replaced by other coaxial cables.

Accessories

Crimp ferrule

Part Number	Cable group
FFS.00.160.DN	1
FFS.00.161.MN	2-3-4
FFS.00.163.DN	5
FFS.00.164.DN	6

All connector models for cable crimping are supplied with a crimp ferrule. To order this part separately please use the above part numbers.

Earthing cap

Part Number	Cable group
GCD.00.020.LN	1
GCD.00.032.LN	2-3-4-5

Other accessories as for example strain reliefs are also available for the series 00. Please refer to the 'Accessories' section.

Tooling

Crimping tool with dies

Part Number	Cable group
DPA.99.123.1K	1
DPB.99.123.8K	2-3-4
DPA.99.125.2K	5
DPA.99.176.2K	6

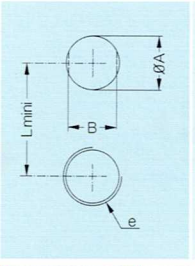
Other tooling can also be used with the series 00. Please refer to the 'Tooling' section.

Torque: 2.5 Nm
1N = 0.102 Kg

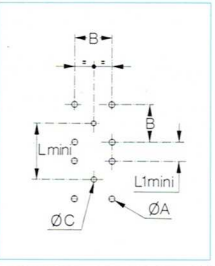
Note: All dimensions are in millimetres

Cut-out

Panel cut-out



PCB Drilling Pattern

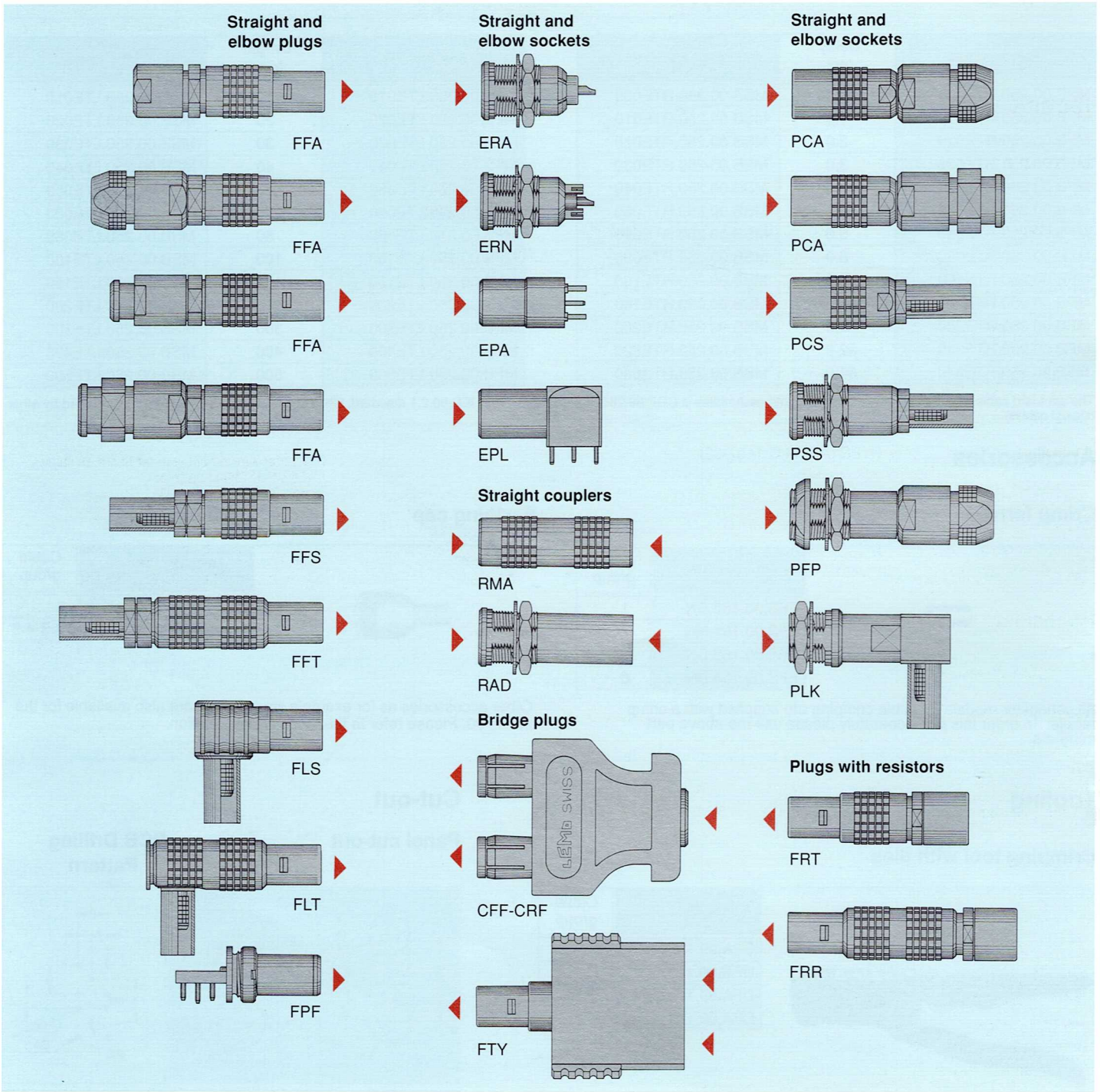


Model	Dimensions					
	A	B	C	L	L1	e
HGP-HGW SWH	7.1	–	–	14.5	–	–
ERC	–	–	–	9.0	–	M7x0.5
ERT	$7^{0}_{-0.02}$	–	–	–	–	–
All other models	7.1	6.50	–	14.5	–	–
ABB	9.5	–	–	15.0	–	–
ABD	12.9	11.90	–	20.5	–	–
EPN	0.9	5.08	–	–	2.0	–
All other models	0.8	5.08	0.7	8.0	2.9	–

Series 0A

The series 0A of coaxial connectors (50 Ω or 75 Ω) finds many applications in the Audio and Video field and particularly in telecommunications. Fixed sockets can be mounted at a very high panel density because the push-pull LEMO self-latching system has no rotating external coupling mechanism that has to be manually operated.

Interconnections

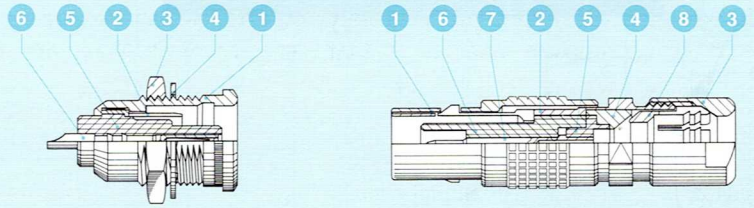


Model description

ABA Adapter from LEMO socket to BNC plug UG-88/U type
CFF Bridge plug with two non-latching plugs
CRF Bridge plug with two non-latching plugs and one monitoring socket
EPA Fixed socket for printed circuit
EPL Elbow socket (90°) for printed circuit
ERA Fixed socket, nut fixing
ERN Fixed socket with tag, nut fixing
FFA Straight plug with cable collet
FFA Straight plug with oversize cable collet
FFA Straight plug with cable collet and nut for fitting a strain relief
FFA Straight plug with oversize cable collet and nut for fitting a strain relief
FFS Straight plug for cable crimping
FFT Straight plug for cable crimping (long version)
FLS Elbow plug (90°) for cable crimping
FLT Elbow plug (90°) for cable crimping (long version)
FPF Elbow plug (90°) non-latching, for printed circuit
FRR Straight plug with resistor (long version)
FRT Straight plug with resistor
FTY Straight plug with two parallel sockets
PCA Free socket with cable collet and oversize collet nut
PCA Free socket with cable collet and oversize collet nut for fitting a strain relief
PCS Free socket for cable crimping
PLK Elbow socket (90°), nut fixing, for cable crimping (back panel mounting)
PFP Fixed socket with two fixing nuts, cable collet and oversize collet nut (back panel mounting)
PSS Fixed socket for cable crimping, nut fixing
RAD Fixed coupler, nut fixing
RMA Free coupler

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. hexagonal nut
4. locking washer
5. insulator
6. female contact



Straight plug
1. outer shell
2. latch sleeve
3. collet nut
4. centre-piece
5. rear insulator
6. front insulator
7. male contact
8. collet

Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)							
		Chrome[1]			Nickel		Gold plated		
		Cu	Ni	Cr	Cu	Ni	Cu	Ni	Au
Outer shell, collet nut	Brass (ASTM C 385)	0.5	3	0.3	0.5	3	0.5	3	0.5[2]
Earthing crown	Cu-Be (FS-QQ-C-530)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm							
Latch sleeve	Special brass	0.5	3		0.5	3	0.5	3	1.5
Crimp ferrule	Copper (ASTM C 187)	0.5	3		0.5	3	0.5	3	
Locking washer	Bronze (ASTM C 521)	0.5	3		0.5	3	0.5	3	
Other metallic parts	Brass (ASTM C 385)	0.5	3		0.5	3	0.5	3	
Insulators	PTFE (ASTM C 1457-83)								
Male solder contact and male print contact	Brass (ASTM C 385)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm							
Male crimp contact	Brass (ASTM C 345)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm							
Female contact (50Ω)	Bronze (ASTM C 345)	Cu: 0.5 µm + Ni: 3 µm + Au: 2,0 µm							
Female contact (75 Ω)	Cu-Be (FS-QQ-C-530)	Cu: 0.5 µm + Ni: 3 µm + Au: 2,0 µm							

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26078C, grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

1) Standard surface treatment for printed circuit models is nickel plating
2) Gold MIL-G-45204C type I, class 00.

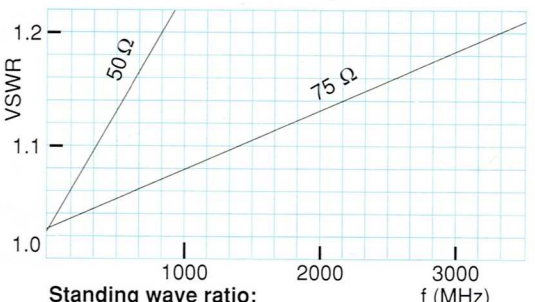
Mechanical and climatical

Characteristics	Unit	Type		Standard	Method
		250	275		
Contact retention force	N	> 12	> 8	MIL-STD-1344A	2007.1
Cable retention force	N	> 250	> 250	MIL-STD-1344A	2009.1
Endurance	Cycles	> 1000	> 1000	MIL-STD-1344A	2016
Operating temperature	°C	– 55 + 260 (– 67°F + 500°F)			

1 N = 0.102 kg

Electrical

Characteristics	Unit	Type		Standard	Method
		250	275		
Impedance	Ω	50	75		
Operating voltage (50Hz)	kVrms	0.28	0.7	IEC 130-1	
Test voltage (50 Hz)	kVrms	0.8	2.1	MIL-STD-1344A	3001.1
Rated current	A	6	2	IEC 512-3	
Contact resistance	mΩ	< 4.5	< 6	MIL-STD-202	307
Insulation resistance	Ω	> 10^{12}	> 10^{12}	MIL-STD-1344A	3003.1
VSWR (f = GHz)		1.03 + 0.2f	1.03 + 0.05f	MIL-STD-1344A	3005



Standing wave ratio:
(50Ω) FFA plug and PCA socket
(75Ω) FFS plug and PCS socket

Recommended cables

Group 1	2	3	4	5	6	7	8	Type
						●		RG.58 C/U
							●	RG.59 B/U
●								RG.174 A/U
	●							RG.179 B/U
●								RG.316 /U
●								CCE.99.281.505 LEMO

Group 1	2	3	4	5	6	Type	
●						CCH.99.281.505	LEMO
			●			2YCY (0.4/2.5)	Siemens
				●		2YCCY (0.4/2.5)	Siemens
		●				0722 102 11 001	Philips
		●				0722 102 29 001	Philips
					●	HF-5408/1	Dätwyler

Part number example

FFS	0A	250	N	T	A	E	31	

Model: page 36–38

Series: 0A

Type: 250 = coaxial (50Ω)

Housing:
C = chrome plated brass
N = nickel plated brass
D = gold plated brass

Insulator:
T = PTFE

Variant[1)]

Ø Collet or crimp ferrule

Cable fixing type:
C = cable collet
E = crimp
K = oversize collet

Contact type:
A = male solder
C = male crimp
D = male print
F = female-female-male
L = female solder
L = female-male
M = female-female
M = female crimp
N = female print

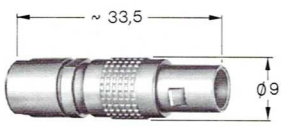
FFS.0A.250.NTAE31 Straight plug for cable crimping, series 0A, 50Ω coaxial type, nickel plated brass shell, PTFE insulator, male solder contact, E type crimp ferrule for a group 1 cable.

Note:
All plugs are fitted with a male contact, all sockets and couplers with female contacts as indicated in the part number.
The FFS.0A.250.NTAE52 and FFT.0A.275.NTAE63 can also be supplied with a crimp contact.

1) A 'Z' in the variant position of the part number indicates that the model is fitted with a collet nut for fitting a strain relief. These are ordered separately as indicated in the 'Accessories' section.This position of the part number is also used to specify the bridge plug housing colour (refer to page 38) .

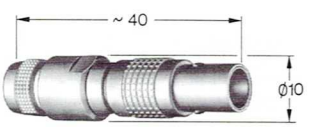
Models

FFA



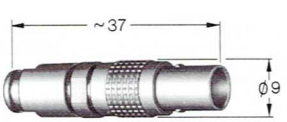
Part Number	Cable group
FFA.0A.250.NTAC29	1
FFA.0A.250.NTAC52	7
FFA.0A.275.NTAC27	2
FFA.0A.275.NTAC40	4
FFA.0A.275.NTAC47	5

FFA



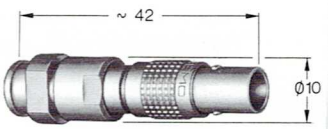
Part Number	Cable group
FFA.0A.275.NTAK66	8

FFA



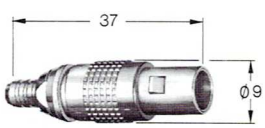
Part Number	Cable group
FFA.0A.250.NTAC29Z	1
FFA.0A.250.NTAC52Z	7
FFA.0A.275.NTAC27Z	2
FFA.0A.275.NTAC40Z	4
FFA.0A.275.NTAC47Z	5

FFA



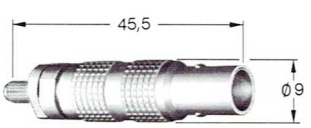
Part Number	Cable group
FFA.0A.275.NTAK66Z	8

FFS



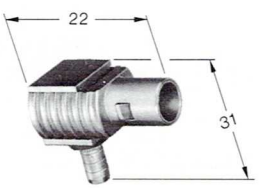
Part Number	Cable group
FFS.0A.250.NTAE31	1
FFS.0A.250.NTAE52	7
FFS.0A.275.NTAE31	2
FFS.0A.275.NTAE40	3
FFS.0A.275.NTAE43	4
FFS.0A.275.NTAE48	5
FFS.0A.275.NTAE63	6-8

FFT



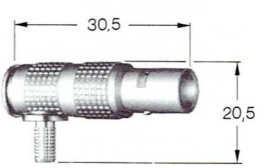
Part Number	Cable group
FFT.0A.275.NTAE31	2
FFT.0A.275.NTAE43	4
FFT.0A.275.NTAE48	5
FFT.0A.275.NTAE63	6-8

FLS



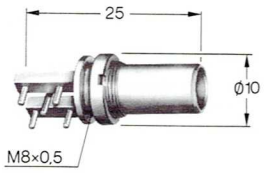
Part Number	Cable group
FLS.0A.250.NTAE31	1
FLS.0A.250.NTAE52	7
FLS.0A.275.NTAE31	2
FLS.0A.275.NTAE40	3
FLS.0A.275.NTAE43	4
FLS.0A.275.NTAE48	5

FLT



Part Number	Cable group
FLT.0A.275.NTAE48	5

FPF



Part Number	Weight (g)
FPF.0A.275.NTD	4.6

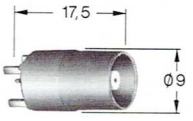
ERA

Part Number	Weight (g)
ERA.0A.250.NTL	4.4
ERA.0A.275.NTL	4.3

ERN

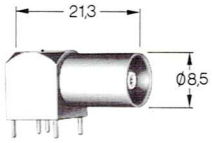
Part Number	Weight (g)
ERN.0A.250.NTL	3.5
ERN.0A.275.NTL	3.5

EPA



Part Number	Weight (g)
EPA.0A.275.NTN	6.2

EPL

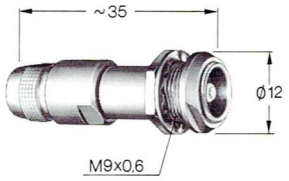


Part Number	Weight (g)
EPL.0A.275.NTN	9

PSS

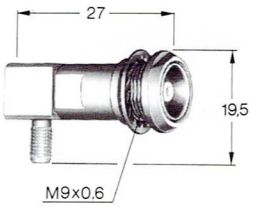
Part Number	Cable group
PSS.0A.250.NTLE31	1
PSS.0A.250.NTLE52	7
PSS.0A.275.NTLE31	2
PSS.0A.275.NTLE40	3
PSS.0A.275.NTLE43	4
PSS.0A.275.NTLE48	5
PSS.0A.275.NTLE63	6-8

PFP



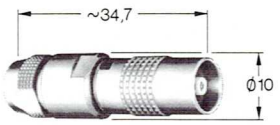
Part Number	Cable group
PFP.0A.275.NTLK66	8

PLK



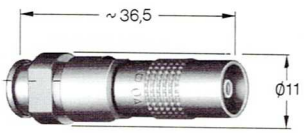
Part Number	Cable group
PLK.0A.275.NTLE43	4
PLK.0A.275.NTLE48	5
PLK.0A.275.NTLE61	6-8

PCA



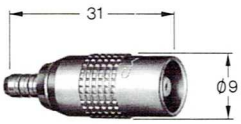
Part Number	Cable group
PCA.0A.275.NTLK66	8

PCA



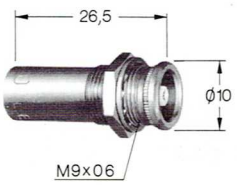
Part Number	Cable group
PCA.0A.275.NTLK66Z	8

PCS



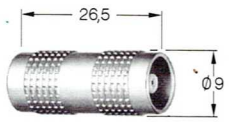
Part Number	Cable group
PCS.0A.250.NTLE31	1
PCS.0A.250.NTLE52	7
PCS.0A.275.NTLE31	2
PCS.0A.275.NTLE40	3
PCS.0A.275.NTLE43	4
PCS.0A.275.NTLE48	5
PCS.0A.275.NTLE63	6-8

RAD



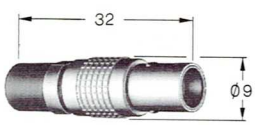
Part Number	Weight (g)
RAD.0A.250.NTM	6.4
RAD.0A.275.NTM	6.4

RMA



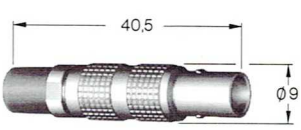
Part Number	Weight (g)
RMA.0A.250.NTM	4.4
RMA.0A.275.NTM	4.3

FRT



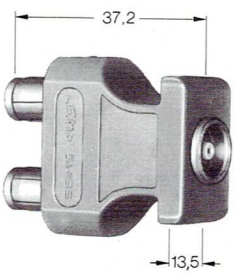
Part Number	Imp. (Ω)
FRT.0A.250.NTA50	50
FRT.0A.275.NTA75	75

FRR



Part Number	Imp. (Ω)
FRR.0A.250.NTA50	50
FRR.0A.275.NTA75	75

CRF-CFF

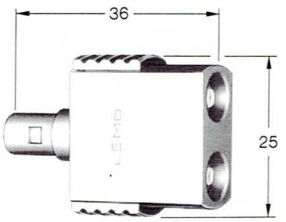


Part Number	Weight (g)
CRF.0A.275.PTEG	14.5
CFF.0A.275.PTCG	13.8

Note: Toutes les dimensions sont exprimées en millimètres

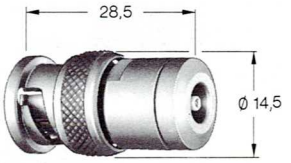
For housing colour see table on next page

FTY



Part Number	Weight (g)
FTY.0A.275.NTF	33

ABA



Part Number	Weight (g)
ABA.0A.250.NTL	18.7
ABA.0A.275.NTL	18.5

Plastic housing colours

Ref.	Colour
A	blue
B	white
G	grey
J	yellow
M	brown

Ref.	Colour
N	black
R	red
S	orange
V	green

The last letter 'G' of the bridge plug part number indicates a grey coloured housing
For other colours see the adjacent table and change the letter 'G' of the part number to the letter of the colour required.

Note: All dimensions are in millimetres

Accessories

Crimp ferrule

Part Number	Cable group
FFS.00.161.MN	1-2
FFS.0A.160.MN	3
FFS.0A.161.MN	4
FFS.00.162.MN	5
FFS.00.165.MN	6
FFS.00.164.MN	7
FFS.0A.165.MN	8

All connector models for cable crimping are supplied with a crimp ferrule. To order this part separately please use the above part numbers.

Tooling

Crimping tool with dies

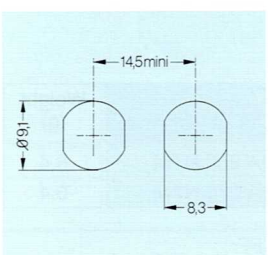
Part Number	Cable group
DPA.99.003.8K	1-2
DPA.99.005.2K	3-4
DPA.99.005.5K	5
DPA.99.006.2K	7
DPA.99.007.0K	6-8
DPA.99.127.0K[1)]	6-8
DPA.99.176.2K[1)]	7

1) For models fitted with crimp contact

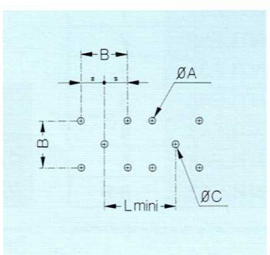
Other accessories and tooling can also be used with the 0A series.
Please refer to the corresponding sections.

Cut-out

Panel cut-out



PCB drilling pattern

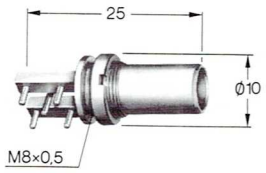


Model	Dimensions			
	A	B	C	L
EPL	0.8	7.00	0.8	10.5
FPF	1.0	5.08	1.0	13.0
EPA	1.6	5.08	0.9	10.0

Torquing of mounting nuts: 3 Nm
1N = 0.102 Kg

Note: All dimensions are in millimetres

FPF



Part Number	Weight (g)
FPF.0A.275.NTD	4.6

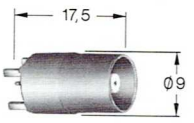
ERA

Part Number	Weight (g)
ERA.0A.250.NTL	4.4
ERA.0A.275.NTL	4.3

ERN

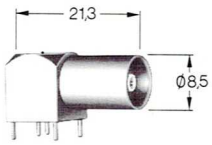
Part Number	Weight (g)
ERN.0A.250.NTL	3.5
ERN.0A.275.NTL	3.5

EPA



Part Number	Weight (g)
EPA.0A.275.NTN	6.2

EPL

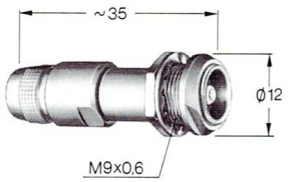


Part Number	Weight (g)
EPL.0A.275.NTN	9

PSS

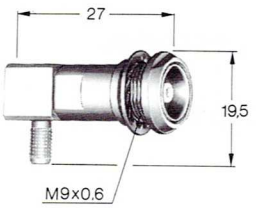
Part Number	Cable group
PSS.0A.250.NTLE31	1
PSS.0A.250.NTLE52	7
PSS.0A.275.NTLE31	2
PSS.0A.275.NTLE40	3
PSS.0A.275.NTLE43	4
PSS.0A.275.NTLE48	5
PSS.0A.275.NTLE63	6-8

PFP



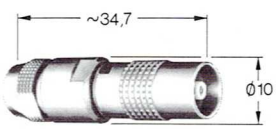
Part Number	Cable group
PFP.0A.275.NTLK66	8

PLK



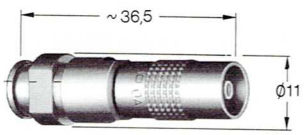
Part Number	Cable group
PLK.0A.275.NTLE43	4
PLK.0A.275.NTLE48	5
PLK.0A.275.NTLE61	6-8

PCA



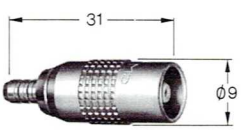
Part Number	Cable group
PCA.0A.275.NTLK66	8

PCA



Part Number	Cable group
PCA.0A.275.NTLK66Z	8

PCS

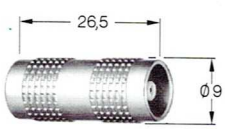


Part Number	Cable group
PCS.0A.250.NTLE31	1
PCS.0A.250.NTLE52	7
PCS.0A.275.NTLE31	2
PCS.0A.275.NTLE40	3
PCS.0A.275.NTLE43	4
PCS.0A.275.NTLE48	5
PCS.0A.275.NTLE63	6-8

RAD

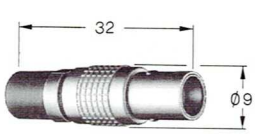
Part Number	Weight (g)
RAD.0A.250.NTM	6.4
RAD.0A.275.NTM	6.4

RMA



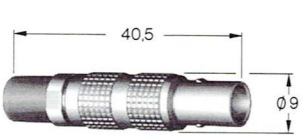
Part Number	Weight (g)
RMA.0A.250.NTM	4.4
RMA.0A.275.NTM	4.3

FRT



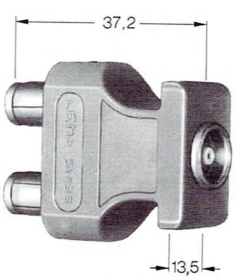
Part Number	Imp. (Ω)
FRT.0A.250.NTA50	50
FRT.0A.275.NTA75	75

FRR



Part Number	Imp. (Ω)
FRR.0A.250.NTA50	50
FRR.0A.275.NTA75	75

CRF-CFF

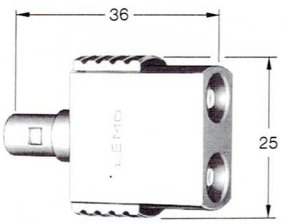


Part Number	Weight (g)
CRF.0A.275.PTEG	14.5
CFF.0A.275.PTCG	13.8

Note: Toutes les dimensions sont exprimées en millimètres

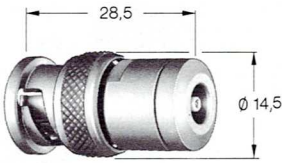
For housing colour see table on next page

FTY



Part Number	Weight (g)
FTY.0A.275.NTF	33

ABA



Part Number	Weight (g)
ABA.0A.250.NTL	18.7
ABA.0A.275.NTL	18.5

Plastic housing colours

Ref.	Colour
A	blue
B	white
G	grey
J	yellow
M	brown

Ref.	Colour
N	black
R	red
S	orange
V	green

The last letter 'G' of the bridge plug part number indicates a grey coloured housing
For other colours see the adjacent table and change the letter 'G' of the part number to the letter of the colour required.

Note: All dimensions are in millimetres

Accessories

Crimp ferrule

Part Number	Cable group
FFS.00.161.MN	1-2
FFS.0A.160.MN	3
FFS.0A.161.MN	4
FFS.00.162.MN	5
FFS.00.165.MN	6
FFS.00.164.MN	7
FFS.0A.165.MN	8

All connector models for cable crimping are supplied with a crimp ferrule. To order this part separately please use the above part numbers.

Tooling

Crimping tool with dies

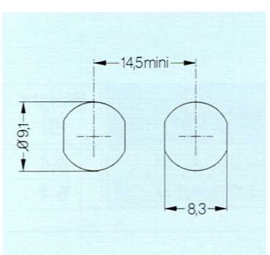
Part Number	Cable group
DPA.99.003.8K	1-2
DPA.99.005.2K	3-4
DPA.99.005.5K	5
DPA.99.006.2K	7
DPA.99.007.0K	6-8
DPA.99.127.0K[1)]	6-8
DPA.99.176.2K[1)]	7

1) For models fitted with crimp contact

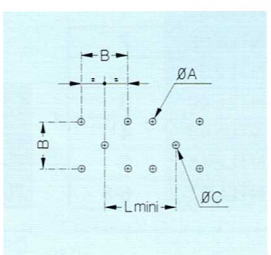
Other accessories and tooling can also be used with the 0A series.
Please refer to the corresponding sections.

Cut-out

Panel cut-out



PCB drilling pattern



Model	Dimensions			
	A	B	C	L
EPL	0.8	7.00	0.8	10.5
FPF	1.0	5.08	1.0	13.0
EPA	1.6	5.08	0.9	10.0

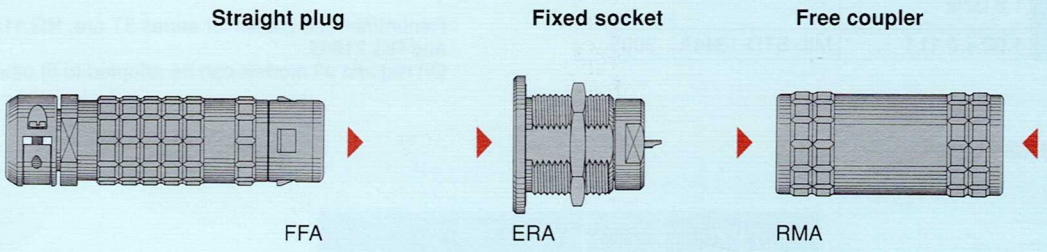
Torquing of mounting nuts: 3 Nm
1N = 0.102 Kg

Note: All dimensions are in millimetres

Series 3T

For all video transmission applications, LEMO adds the series 3T to its coaxial and triaxial 75 Ω connectors range. Particularly intended for outdoor uses it guarantees a protection index of IP66 as per IEC 529 (mated connectors). The LEMO series 3T connectors are fully intermatable with the Jupiter ULC 75 Ω series size III.

Interconnections



Model description

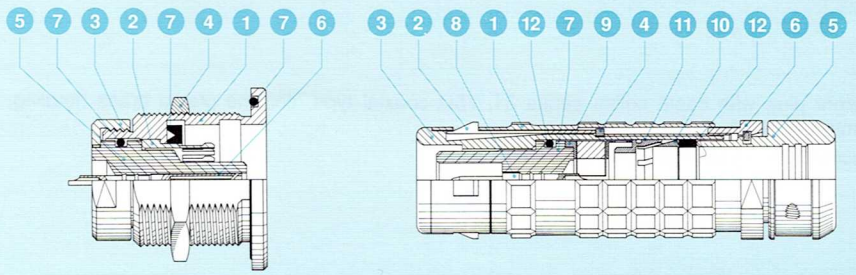
ANB Adapter from LEMO socket to N socket UG 23 B/U type

ERA Fixed socket, nut fixing
FFA Straight plug with cable clamp

RMA Free coupler

Part section showing internal components

Fixed socket
1. shell
2. earthing crown
3. retaining nut
4. hexagonal nut
5. insulator
6. female contact
7. sealing ring



Straight plug
1. outer shell
2. latch sleeve
3. inner shell
4. circlip
5. collet nut
6. clamp holder
7. insulator
8. male contact
9. insert carrier
10. earthing cone
11. earthing crown
12. gland

Technical characteristics

Material and treatment

Components	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell and Collet nut	Brass (ASTM C 385)	0.5	3	0.3	
Earthing crown	Brass (ASTM C 385)	0.5	3		1.5
Latch sleeve	Special brass	0.5	3	0.3	
Inner shell	Brass (ASTM C 385)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PTFE (ASTM D 1457-83)				
Sealing rings	Silicone rubber				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26078C, grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

Mechanical and climatical

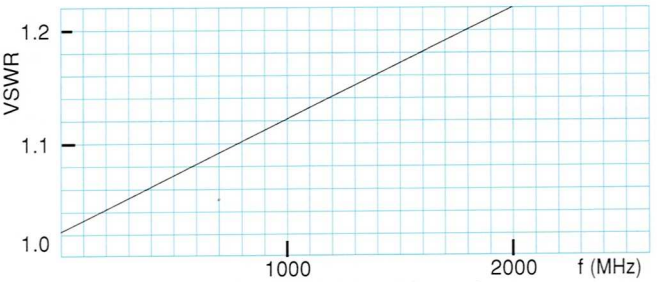
Characteristics	Value	Standard	Method
Contact retention force	> 18 N	MIL-STD-1344A	2007.1
Cable retention force	> 900 N *	MIL-STD-1344A	2009.1
Endurance	> 1000 cycles	MIL-STD-1344A	2016
Operating temp.	– 55°C + 230°C (– 67°F + 446°F)		

1 N = 0.102 kg

* Indicative value measured wiht a RG216/U cable

Electrical

Characteristics	Value	Standard	Method
Impedance	75 Ω		
Operating voltage contact/screen	1.7 kVrms at 50 Hz	IEC 130-1	§14.5
Test voltage contact/screen	2.6 kVrms at 50 Hz	MIL-STD-1344A	3001.1
Rated current	10 A	IEC 512-3	
Contact resistance	< 2.5 mΩ	MIL-STD-202	307
Insulation resistance contact/screen	$>10^{12}\Omega$	MIL-STD-1344A	3003.1
Frequency range VSWR < 1.2	1.6 GHz		
VSWR (f = GHz)	1.02 + 0.11 f	MIL-STD-1344A	3005



Standing wave ratio: FFA plug and PCA socket

Recommended cables for series 3T are: RG.11A/U, RG.144/U and RG.216/U.
On request all models can be adapted to fit other RG cables.

Part number example

FFA	3T	275	C	T	A	Y	11

Model: see below

Series: 3T

Type: 275 = coaxial (75Ω)

Housing:
C = chrome plated brass
N = nickel plated brass

Insulator:
T = PTFE

Ø Clamp

Cable fixing type:
Y = clamp

Contact type:
A = male solder
L = female solder
M= female-female

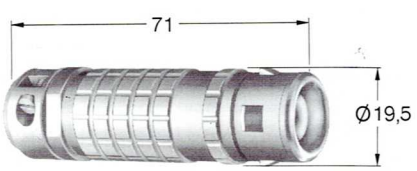
FFA.3T.275.CTAY11 Straight plug with cable collet, series 3T, 75Ω coaxial type, chrome plated brass housing, PTFE insulator, male solder contact, Y type clamp for an 11mm OD cable.

Note: ERA fixed socket and RMA coupler have a gold plated earthing crown.

Models

FFA

Part Number
FFA.3T.275.CTAY11

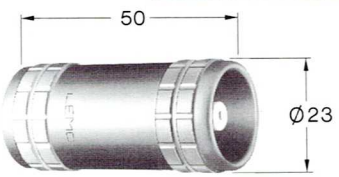


ERA

Part Number	Weight (g)
ERA.3T.275.CTL	43.3

RMA

Part Number	Weight (g)
RMA.3T.275.CTM	78.4



ANB

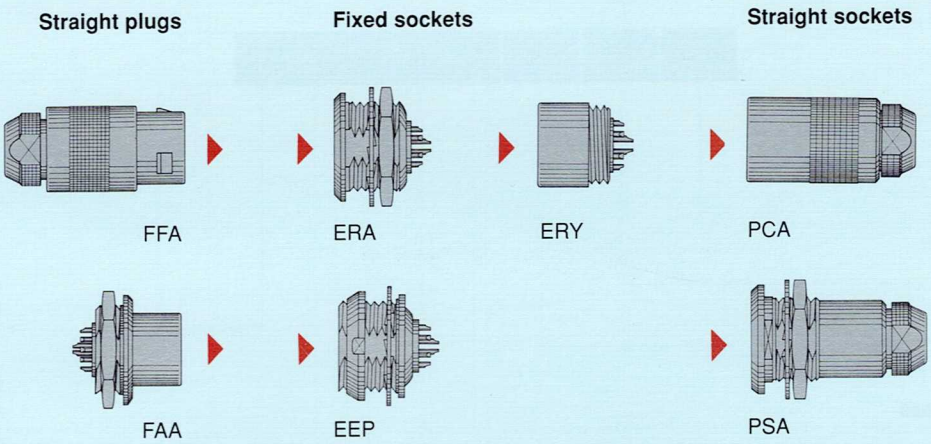
Part Number	Weight (g)
ANB.3T.275.NTM	98.3

Note: All dimensions are in millimetres

Series 2C

In many applications it is necessary to use multipole connectors that have shortened dimensions but require high contact densities. LEMO connectors meet these needs with its short series which has plugs of only approximately 30 mm length. The series 2C belongs to our Standard Group and is available with a 50 Ω coaxial contact insert as well as multipole up to 14 contacts.

Interconnections

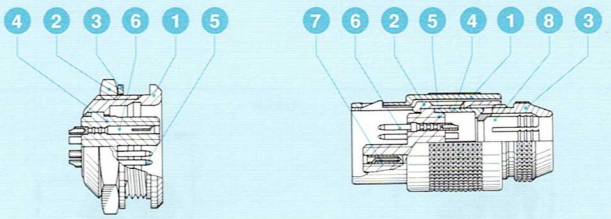


Model description

EEP Fixed socket, nut fixing (back panel mounting)
ERA Fixed socket, nut fixing
ERY Fixed socket, threaded, with visible shell (to be screwed into panel)
FAA Straight plug, non-latching, nut fixing
FFA Straight plug with cable collet
PCA Free socket with cable collet
PSA Fixed socket, nut fixing, with cable collet

Part section showing internal components

Fixed socket
1. shell
2. hexagonal nut
3. locking washer
4. insulator
5. male contact
6. female contact



Straight plug
1. outer shell
2. latch sleeve
3. collet nut
4. split centre-piece
5. insulator
6. male contact
7. female contact
8. collet

Technical characteristics

Material and treatment

Components	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	
Latch sleeve	Special brass	0.5	3		
Locking washer	Bronze (ASTM C 521)	0.5	3		
Male screen contact[1)]	Brass (ASTM C 385)	0.5	3		1.5
Female screen contact[1)]	Bronze (ASTM C 544)	0.5	3		1.5
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PTFE (ASTM D 1457-83) [1)]				
	PBTP (MIL-M-24519)				
	PEEK (MIL-P-46183)				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26074C, grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1

1) For coaxial type only

Electrical

Reference	Value	Standard	Method
Insulation resistance contact/contact	$>10^{12}\ \Omega$	MIL-STD-1344A	3003.1
Insulation resistance contact/screen	$>10^{12}\ \Omega$	MIL-STD-1344A	3003.1

Mechanical and climatical

Reference	Value	Standard	Method
Cable retention force	> 500 N	MIL-STD-1344A	2009.1
Endurance	> 500 cycles	MIL-STD-1344A	2016
Operating temperature	– 55°C + 250°C (– 67°F + 482°F)*		

* Depending on the used insert material (example: PEEK)

Part number example

FFA	2C	306	C	N	A	C	27	

Model: page 42 / 44

Series: 2C / 2G

Type: page 43 / 44

Housing:
C = chrome plated brass

Insulator:
T = PTFE[1)]
N = PBTP
L = PEEK

Variant[3)]

Ø Collet
page 43 / 44

Cable fixing type
C = cable collet
D = cable collet[2)]

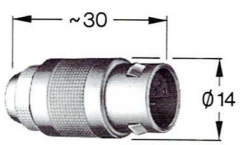
Contact type:
A = male solder
L = female solder

FFA.2C.306.CNAC27 Straight plug with cable collet, series 2C, multipole type (6 contacts), chrome plated brass housing, PBTP insulator, male and female solder contacts, type C collet of 2.7 mm dia for screened cable.

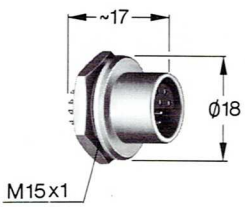
Note:
1) For coaxial type only
2) For 2G series only
3) All models with cable collet can be fitted with a collet nut for fitting a strain relief.
If needed add a 'Z' in the variant position and order the strain relief separately as indicated in the 'Accessories' section.

Models

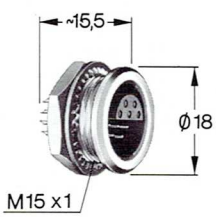
FFA



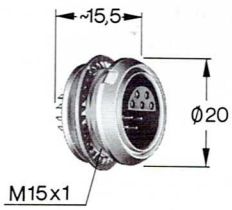
FAA



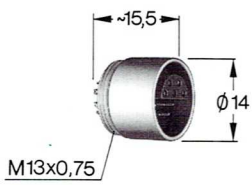
ERA



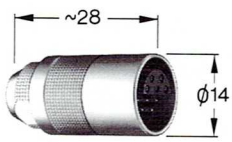
EEP



ERY



PCA



PSA

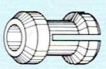
Note: All dimensions are in millimetres

Types

Reference	Series	Impedance (Ω)	Contact No	Contact Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Current (A)
250	2C	50	1	1.3	0.7	1.0	2.10	3.0	10
302		–	2	1.6	0.6	0.80	1.80	2.40	20
303		–	3	1.3	0.5	0.70	1.50	2.10	15
304		–	4	1.3	0.6	0.80	1.80	2.40	15
306		–	6	1.3	0.5	0.70	1.50	2.10	12
308		–	8	0.7	0.3	0.45	0.95	1.35	7
310		–	10	0.7	0.3	0.45	0.95	1.35	7
312		–	12	0.7	0.2	0.30	0.60	0.90	5
314		–	14	0.7	0.2	0.30	0.60	0.90	5

Note: All dimensions are in millimetres

Collets



Reference		Series	Ø Cable	
Type	Ø		max.	min.
C	27	2C	2.6	1.7
C	32		3.1	2.5
C	37		3.6	3.0
C	42		4.1	3.5
C	47		4.6	4.0
C	52		5.1	4.5
C	57		5.6	5.0
C	62		6.1	5.5
C	67		6.6	6.0
C	72		7.1	6.5
C	75		7.4	7.0
C	80		7.9	7.5

Note:
The C type collets will clamp screened or unscreened cables. On request the L type for clamping unscreened cables is available in the same diameters as those of the C type.

Accessories

Collet nut for fitting a strain relief

Part Number	Weight (g)
FFM.2C.130.LC	4.1

For available strain reliefs refer to the 'Accessories' section.

Note: All dimensions are in millimetres

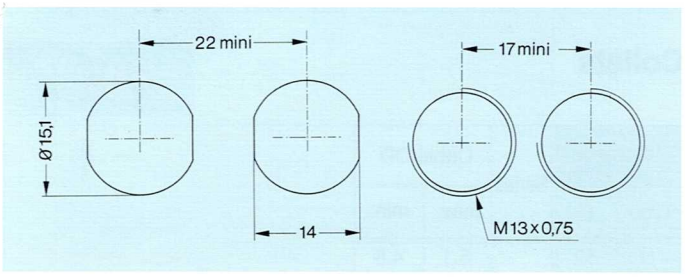
Conical nut

Part Number	Weight (g)
GEC.2C.240.LC	1.5

Other accessories as well as tooling are also available for the series 2C.Refer to the corresponding section.

Cut-out

Panel cut-out

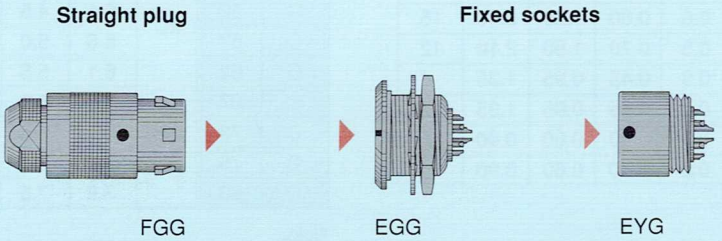


Torquing of mounting nuts: 12 Nm
1N = 0.102 Kg

Series 2G

The series 2G belongs to the New Generation group and thus has a mechanical key. It is a short series having the same housing dimensions as the series 2C and is only available with a multipole insert with 18 contacts.

Interconnections



Model description

EGG Fixed socket, nut fixing, with key (G)

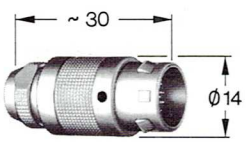
EYG Fixed socket, threaded, visible shell, with key (G) (to be screwed into panel)

FGG Straight plug with key (G) and cable collet

The technical characteristics as well as part section showing internal components and part number example are the same as for the series 2C.

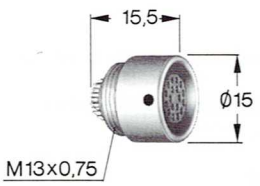
Models

FGG



EGG

EYG

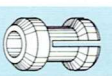


The FGG model can be fitted with a collet nut for a cable strain relief. If needed add a 'Z' in the 'variant' position of the part number and order the strain relief separately as explained in the 'Accessories' section.

Type

Reference	Series	Contact No	Contact Ø (mm)	Us (kV rms)	Us (kV dc)	Us (kV rms)	Us (kV dc)	Rated Current (A)
318	2G	18	0.7	0.46	0.66	1.4	2	5.5

Collets



Reference		Series	Cable OD	
Type	Ø		max.	min.
D	52	2G	5.1	4.5
D	62		6.1	5.5
D	72		7.1	6.5
D	80		7.9	7.5

Other accessories and tooling can be used with this series. Please refer to the relative section. For panel cut-out and torquing of mounting nuts, refer to series 2C.

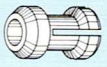
Note: all dimensions are in millimetres

Types

Reference	Series	Impedance (Ω)	Contact No	Contact Ø (mm)	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Current (A)
250	2C	50	1	1.3	0.7	1.0	2.10	3.0	10
302		–	2	1.6	0.6	0.80	1.80	2.40	20
303		–	3	1.3	0.5	0.70	1.50	2.10	15
304		–	4	1.3	0.6	0.80	1.80	2.40	15
306		–	6	1.3	0.5	0.70	1.50	2.10	12
308		–	8	0.7	0.3	0.45	0.95	1.35	7
310		–	10	0.7	0.3	0.45	0.95	1.35	7
312		–	12	0.7	0.2	0.30	0.60	0.90	5
314		–	14	0.7	0.2	0.30	0.60	0.90	5

Note: All dimensions are in millimetres

Collets



Reference		Series	Ø Cable	
Type	Ø		max.	min.
C	27	2C	2.6	1.7
C	32		3.1	2.5
C	37		3.6	3.0
C	42		4.1	3.5
C	47		4.6	4.0
C	52		5.1	4.5
C	57		5.6	5.0
C	62		6.1	5.5
C	67		6.6	6.0
C	72		7.1	6.5
C	75		7.4	7.0
C	80		7.9	7.5

Note:
The C type collets will clamp screened or unscreened cables. On request the L type for clamping unscreened cables is available in the same diameters as those of the C type.

Accessories

Collet nut for fitting a strain relief

Part Number	Weight (g)
FFM.2C.130.LC	4.1

For available strain reliefs refer to the 'Accessories' section.

Note: All dimensions are in millimetres

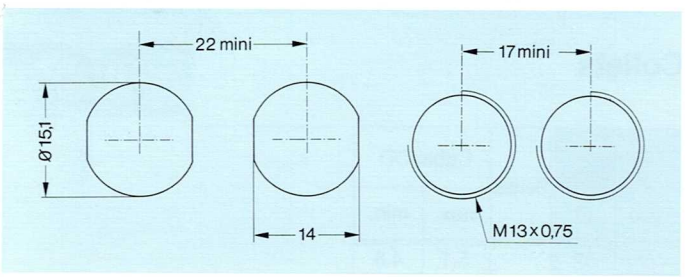
Conical nut

Part Number	Weight (g)
GEC.2C.240.LC	1.5

Other accessories as well as tooling are also available for the series 2C.Refer to the corresponding section.

Cut-out

Panel cut-out



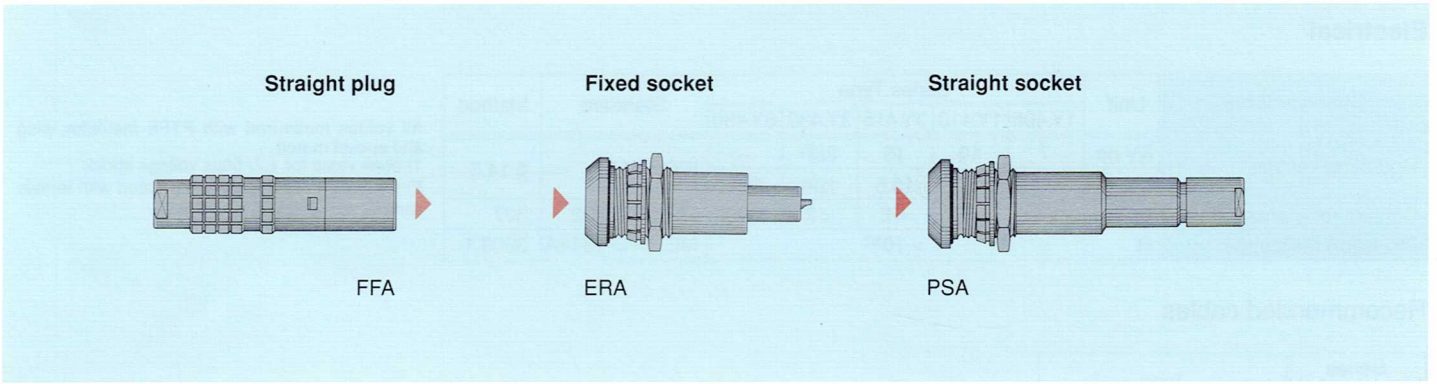
Torquing of mounting nuts: 12 Nm
1N = 0.102 Kg

High Voltage

Series Y

This family of unipole connectors are high voltage connectors designed for operating voltages ranging from 5 to 50 kV. They offer a great deal of security. The long housing permits a mechanical mating long before the contacts are engaged, thus ensuring safe mating even if carried out with the power on. Furthermore, the socket in the series 3Y can be provided with a microswitch to prevent power from being turned on before the plug is mated.

Interconnections



Model description

ERA Fixed socket, nut fixing

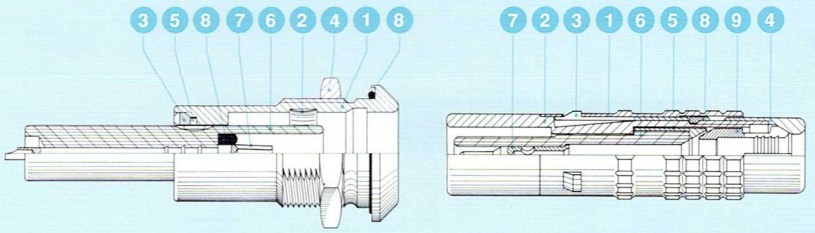
FFA Straight plug with cable collet
FFB Straight plug with cable collet and safety nut

PSA Fixed socket, nut fixing, with cable collet

Part section showing internal components

Fixed socket

1. shell
2. earthing crown
3. castellated nut
4. hexagonal nut
5. circlip
6. insulator
7. female contact
8. sealing ring



Straight plug

1. outer shell
2. inner shell
3. latch sleeve
4. collet nut
5. centre-piece
6. insulator
7. male contact
8. circlip
9. collet

Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	
Earthing crown	Cu-Be (FS-QQ-C-530)	0.5	3		0.15min
Latch sleeve	Special brass	0.5	3	0.3	
Locking ring	Brass (ASTM C 385)	0.5	3		
Inner sleeve	Brass (ASTM C 385)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
O-ring	Silicone rubber (ASTM D 200)				
Insulator	PTFE (ASTM D 1457-83)				
	PEEK (MIL-P-46183)				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Cu-Be (FS-QQ-C-530)	0.5	3		2.0

The surface treatment standards are as follows :

- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

Mechanical and climatical

Characteristics	Unit	Series			Standard	Method
		1Y	3Y	6Y		
Contact retention force	N	> 24	> 60	–[1]	MIL-STD-1344A	2007.1
Cable retention force	N	> 400	> 600	> 800	MIL-STD-1344A	2009.1
Endurance	Cycles	> 1000			MIL-STD-1344A	2016
Operating temperature	°C	– 55 + 230 (– 67°F + 446°F)				

1) non captive contact
1N = 0,102 kg

Electrical

Characteristics	Unit	Series.Type					Standard	Method
		1Y.405	1Y.410	3Y.415	3Y.430	6Y.450		
Operating voltage	KV dc	7	10	15	28[2]	–	IEC 130.1	§ 14.5
	KV rms	5	7	10.5	19[2]	50[1]		
Contact resistance	mΩ	< 3	< 3	< 2	< 2	< 0.4	MIL-STD-202	307
Insulation resistance	Ω	> 10^{12}					MIL-STD-1344A	3003.1

All values measured with PTFE insulator, plug and socket mated
1) peak value for 1.2/ 50µs voltage shock
2) value for male contact plug mated with female contact socket.

Recommended cables

Series			Type
1Y	3Y	6Y	
●			RG.58C/U
●			RG.141A/U
	●		RG.213/U
	●		RG.214/U
		●	RG.220/U
●			CHE.99.483.005 LEMO

Part number example

FFA	1Y	405	C	T	A	C	52

Model: page 47

Series: page 47

Type: page 47

Housing:
C = chrome plated brass

Insulator:
T = PTFE
L = PEEK
S = PA-imide[1]

Ø collet: page 47

Cable fixing type:
C = cable collet

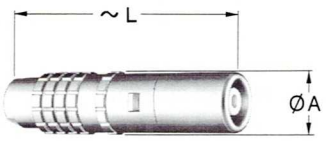
Contact type:
A = male solder
L = female solder

FFA.1Y.405.CTAC52 Straight plug with cable collet, series 1Y, 5kV high voltage type, chrome plated brass housing, PTFE insulator, male solder contact, cable collet for a 5mm max. OD cable.

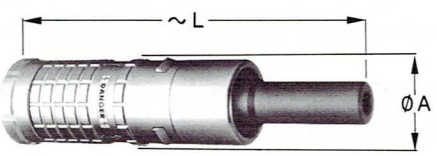
Note:
As standard, plugs are fitted with a male contact and sockets with a female contact. On request these series Y models can be supplied with a female contact for plugs and a male contact for sockets except for PSA model of the series 3Y as well as FFB and ERA models of the series 6Y.
1) for series 6Y only.

Models

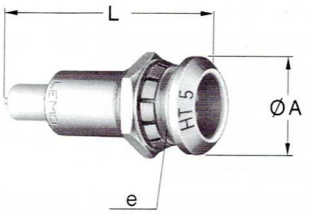
FFA



FFB

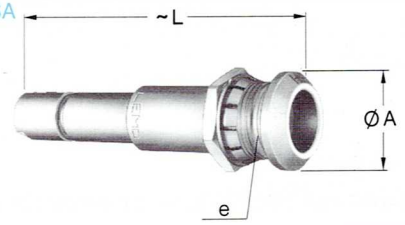


ERA



Model	Dim.	Series Types				
		1Y		3Y		6Y
		405	410	415	430	450
FFA	A	13	13	19	19	–
	L	54 (66)	63 (83)	96 (105)	113 (198)	–
FFB	A	–	–	–	–	47
	L	–	–	–	–	224
ERA	A	20	20	31	31	65
	e	M16x1	M16x1	M24x1	M24x1	M55x2
	L	51 (61)	69 (79)	77 (109)	108 (150)	206
PSA	A	20	20	–	31	–
	e	M16x1	M16x1	–	M24x1	–
	L	71 (74)	81 (93)	–	146	–

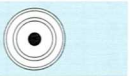
PSA



Note:

Dimensions in brackets indicate the dimensions of plugs fitted with female contact - sockets with a male contact.
As standard FFA and FFB plugs are fitted with a male contact.
As standard ERA and PSA sockets are fitted with a female contact.

Types

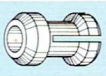


Reference	Series	Contact Ø (mm)	Contact Type		Cable dimension		Us (kV rms)[2]	Us (kV dc)[2]	Ue (kV rms)[3]	Ue (kV dc)[3]	Rated Cur. (A)[1]
			Plug	Socket	Dielectr. max. OD	Cond. max. OD					
405	1Y	1.3	A/L	L/A	3.2	1.15	5	7	7.5	10.5	8
410		1.3	A/L	L/A	3.2	1.15	7	10	10.5	15.0	8
415	3Y	4.5	A[5]	L[5]	7.3	2.45	10.5	15	16	22.5	15
430		4.5	A[5]	L[5]	7.3	2.45	19[6]	28[6]	29[6]	42[6]	15
450	6Y	7	A	L	23	6.6	50[4]	–	70[4]	–	25

A = male solder
L = female solder
Notes: value measured plug and socket mated
1) As per IEC 512-3
2) As per IEC 130.1 § 14.5 b
3) As per MIL-STD-1344A method 3001.1
4) Peak value for 1.2/ 50µs normalized voltage shock
5) See table and note above regarding reverse contact availability
6) Value for male contact plug mated with female contact socket.

Note: All dimensions are in millimetres.

Collets



Reference		Series	Cable OD	
Type	Ø		max.	min.
C	17	1Y	1.6	1.3
C	27		2.6	2.2
C	32		3.1	2.6
C	37		3.6	2.7
C	42		4.1	3.3
C	47		4.6	3.8
C	52		5.1	4.3
C	57		5.6	4.8
C	62		6.1	5.3
C	66		6.5	5.9
C	68		6.7	6.5

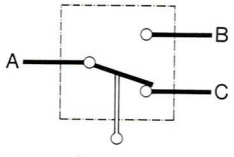
Reference		Series	Cable OD	
Type	Ø		max.	min.
C	42	3Y	4.0	3.1
C	52		5.0	4.1
C	62		6.0	5.1
C	72		7.0	6.1
C	82		8.0	7.1
C	92		9.0	8.1
C	97		9.5	9.1
C	11		10.5	10.1
C	12	6Y	12.0	11.1
C	14		14.0	13.1
C	21		21.0	20.0
C	29		28.8	24.5

On request, other collet diameters covering the range between indicated max. and min. diameters are available.

Accessories

Microswitch for fitting onto ERA.3Y fixed socket

Part Number
ERA.3Y.260.CZZ

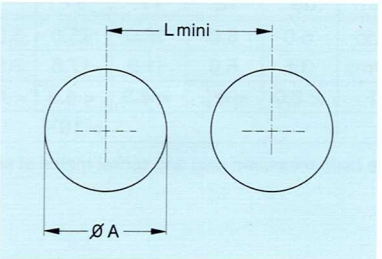


Other accessories and tooling are available for series Y connectors.
Please refer to to corresponding sections.

Note: All dimensions are in millimetres

Cut-out

Panel cut-out and fixing nut torque



Series	Dimensions		Torque (Nm)
	A	L	
1Y	16.1	22.0	14
3Y	24.2	35.5	25
6Y	55.3	67.5	55

High Voltage (New Generation)

Series S–Y–B

In response to the requirements of the nuclear industry for high voltage connectors, LEMO has created a new range of products in the series 0S, 1S, 1Y, 3Y, 4B and 5B which are distinguished by their very favourable size to voltage relationship.
All these connectors are fitted with the Lemo Self-latching system for easy operation in very limited space.
All the plugs in this new series have a safety locking ring, which prevents accidental manual unmating while power is being transmitted.
The inserts are made of polyetheretherketone (PEEK) as well as silicone thus allowing LEMO to develop connectors with test voltages of 12 kV rms in the series 0S and up to 52 kV rms in the series 3Y.
These new connectors are available as single contact high voltage connectors for applications requiring working voltages of 5, 8, 16 and 25 kV rms and in multi-contact high voltage configurations with up to 8 kV rms working voltage per contact.

General technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell, collet nut	Brass(ASTM C 385)	0.5	3	0.3	
Earthing crown	Brass (ASTM C 385)	0.5	3		1.5
	Bronze (ASTM C 544)	0.5	3		1.5
	Cu-Be (FS-QQ-C-530)	0.5	3		1.5[1)]
Latch sleeve	Special Brass	0.5	3	0.3[1)]	
Crimping sleeve	Copper (ASTM C 187)	0.5	3		
Tapered washer	Bronze (ASTM C 521)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PEEK (MIL-P-46183)				
	Silicone rubber (ASTM D 200)				
Cable strain relief	Polyurethane				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0
	Cu-Be (FS-QQ-C-530)	0.5	3		2.0

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

1) for series 1Y-3Y

Mechanical and climatical

Characteristics	Unit	Series						Standard	Method
		0S	1S	1Y	3Y	4B	5B		
Contact retention force	N	–[1)]	–[1)]	–[1)]	–[1)]	> 30	>100	MIL-STD-1344A	2007.1
Cable retention force	N	> 40	> 70	> 70	> 90	> 40	> 40	MIL-STD-1344A	2009.1
Endurance	Cycles	> 1000						MIL-STD-1344A	2016
Operating temperature	°C	– 40 + 80 (– 40°F + 176°F)							

1) non captive contacts
1N = 0.102 kg

Electrical

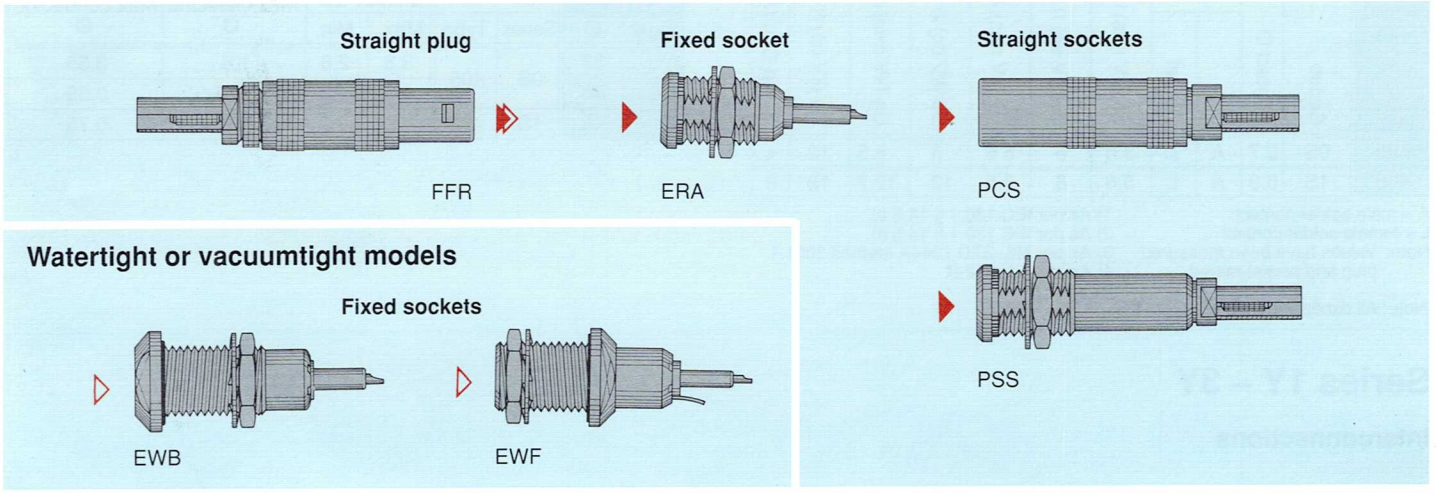
Characteristics	Unit	Series							Standard	Method
		0S	1S	1Y	3Y	4B		5B		
Operating voltage per contact	kVdc	5.0	8.0	16.0	25.0	5.0[1)]	8.0	8.0	IEC 130.1	§ 14.5
	kVrms	3.5	5.6	11.2	17.5	3.5[1)]	5.6	5.6		
Contact resistance	mΩ	< 6.0	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	< 4.5	MIL-STD-202	307
Insulation resistance	Ω	$> 10^{12}$							MIL-STD-1344A	3003.1

1) Type 460

Note: Operating and test voltage have been measured plug and socket mated at sea level.

Series 0S – 1S

Interconnections



Model description

ERA Fixed socket, nut fixing
EWB Fixed socket, nut fixing, vacuumtight, with two flats on flange

EWF Fixed socket, nut fixing , vacuumtight, with two flats on flange and tag, (back panel mounting)

FFR Straight plug for cable crimping with safety ring
PCS Free socket for cable crimping
PSS Fixed socket for cable crimping, nut fixing

Part number example

FFR	0S	405	C	L	A	E	33	

Model: page 49

Series: page 49

Type: page 50

Housing:
C = chrome plated

Insulator:
L = PEEK

Variant[1)]

Ø Crimp ferrule
page 50

Cable fixing type
E = crimp

Contact type
A = male solder
L = female solder

FFR.0S.405.CLAE33 Straight plug with safety ring, series 0S, 5kVdc single high voltage type, chrome plated brass housing, PEEK insulator, male solder contact, crimp ferrule for a 3.3 mm OD cable.

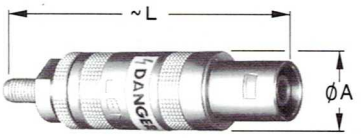
Note:
Plugs are fitted with male contact and sockets with female contact.
1) Models with cable collet can be fitted with a strain relief. For ordering, add a 'Z' in the 'variant' position and order the strain relief separately as explained in the 'Accessories' section.

Dimensions

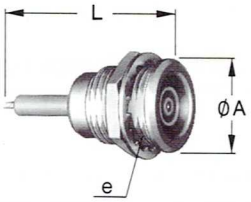
Model	Dim.	Series	
		0S	1S
FFR	A	9	12
	L	42	53
ERA	A	10	14
	e	M9x0.6	M12x1
	L	25	30

Note: All dimensions are in millimetres

FFR



ERA



Models and series

Model	Series	
	0S	1S
ERA	●	●
EWB	●	●
EWF	●	●
FFR	●	●
PCS	●	●
PSS	●	●

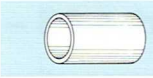
Types

Reference	Series	Contact Ø	Contact type		Us (kV rms) 1)	Us (kV dc) 1)	Us (kV rms) 2)	Us (kV dc) 2)	Ue (kV rms) 3)	Ue (kV dc) 3)	Rated Cur. (A) 4)
			Plug	Socket							
405	0S	0.7	A	L	3.5	5	5.6	8	8.5	12	4
408	1S	0.9	A	L	5.6	8	8.5	12	12.7	18	6

A = male solder contact
L = female solder contact
Note: Values have been measured plug and socket mated

1) As per IEC 130.1 § 14.5 a)
2) As per IEC 130.1 § 14.5 b)
3) As per MIL-STD 1344A method 3001.1
4) As per IEC 512-3

Crimp ferrules

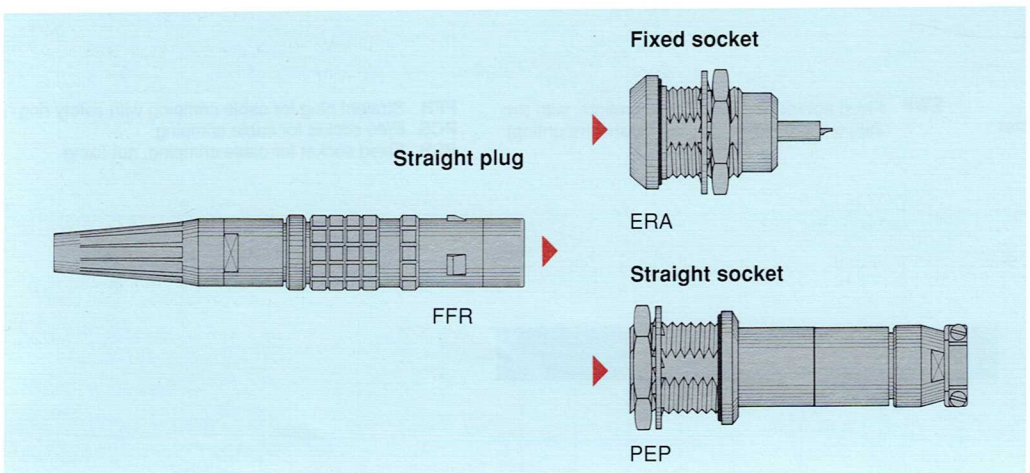


Reference		Connector		Cable dimensions			
				Sheath OD		Max dielectric Ø	Max conductor Ø
Type	Ø	Series	Type	Max.	Min.		
E	33	0S	405	3.3	2.6	1.6	0.55
	48			4.8	4.2	3.0	0.55
	46	1S	408	4.6	4.0	2.3	0.75

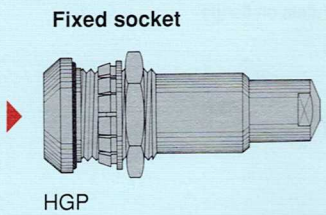
Note: All dimensions are in millimetres.

Series 1Y – 3Y

Interconnections



Watertight or vacuumtight model



Model description

ERA Fixed socket, nut fixing
FFR Straight plug for cable crimping with strain relief and safety ring
PEP Fixed socket, nut fixing, with cable collet nut (back panel mounting)
HGP Fixed socket, nut fixing, watertight

Part number example

FFR	3Y	425	C	F	A	E	76	R

Model: above and page 51

Series: above and page 51

Type: page 51

Housing:
C = chrome plated brass

Insulator:
L = PEEK
F = Silicone 3)

Variant 2)

Ø Crimp ferrule:
page 51

Cable fixing type:
E = crimp
Y = clamp nut 1)

Contact type
A = male solder
L = female solder

FFR.3Y.425.CFAE76R Straight plug with safety ring, series 3Y, 25kVdc single high voltage type, chrome plated brass housing, silicone insulator, male solder contact, crimp ferrule for a 7.6 mm OD cable, red strain relief.

Note:
Plugs are fitted with male contact and sockets with female contact.
1) For PEP model only
2) The strain reliefs are available in nine colours, the corresponding reference letters and colours are to be found in the 'Accessories' section
3) For plugs only

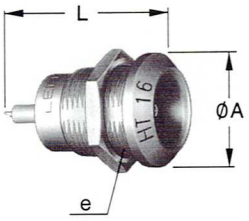
Dimensions

Model	Dim.	Series 1Y	Series 3Y
FFR	A	13	19
	L	83	114
ERA	A	20	31
	e	M16x1	M24x1
	L	34	50

Note: All dimensions are in millimetres

FFR

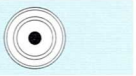
ERA



Models and series

Model	Series 1Y	Series 3Y
ERA	●	●
FFR	●	●
PEP	●	●
HGP	●	●

Types



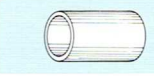
Reference	Series	Contact Ø	Contact type: Plug	Contact type: Socket	Us (kV rms) 1)	Us (kV dc) 1)	Us (kV rms) 2)	Us (kV dc) 2)	Ue (kV rms) 3)	Ue (kV dc) 3)	Rated Cur. (A) 4)
416	1Y	0.9	A	L	11.2	16	16.0	23	25	35	6
425	3Y	1.6	A	L	17.5	25	24.5	35	37	52	8

A = male solder contact
L = female solder contact

Note: Values have been measured plug and socket mated

1) As per IEC 130.1 § 14.5 a)
2) As per IEC 130.1 § 14.5 b)
3) As per MIL-STD 1344A method 3001.1
4) As per IEC 512-3

Fixing system



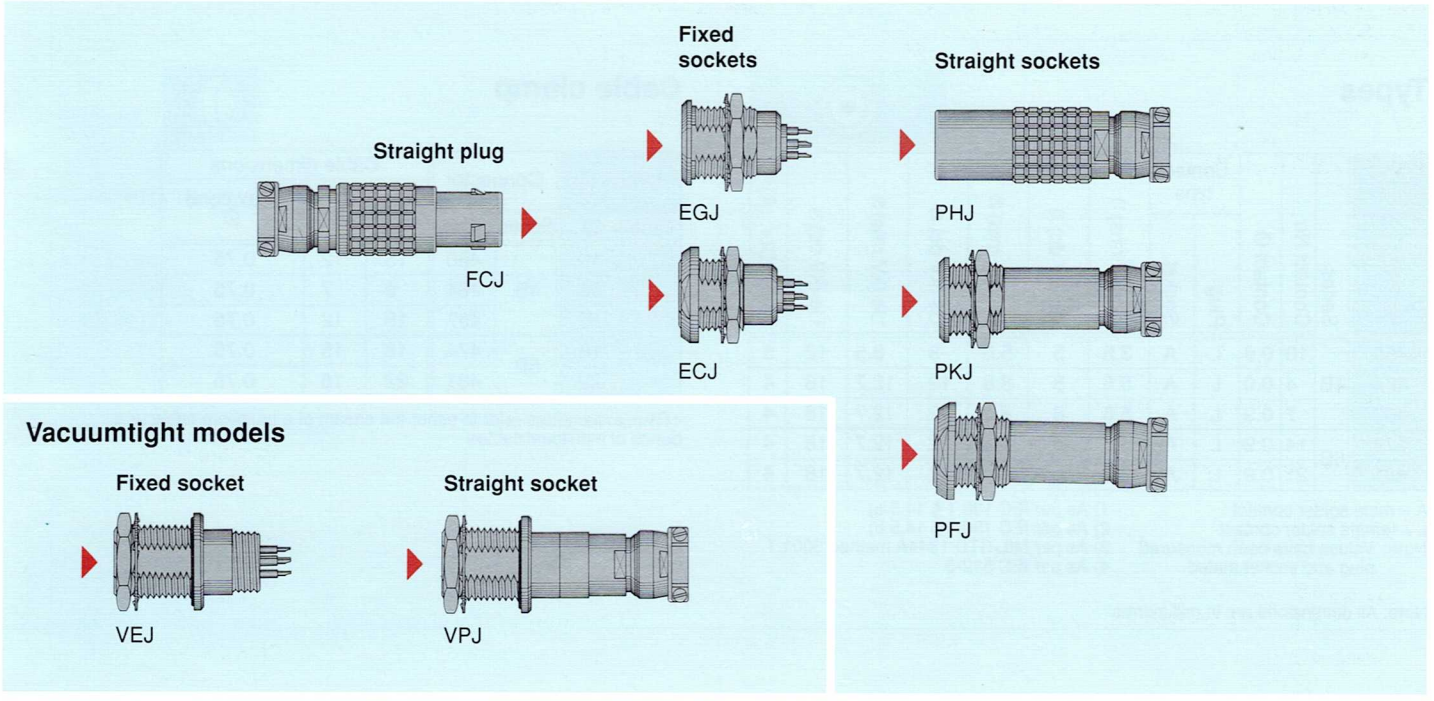
Reference Type	Reference Ø	Connector Series	Connector Type	Cable dimensions: Sheath OD Max.	Sheath OD Min.	Max dielec Ø 1)	Max cond. Ø
E	63	1Y	416	6.6	5.5	3.7	0.75
	64						1.35
Y	10			10.0	7.0		1.35
E	55	3Y	425	5.7	5.2	4.1	1.35
	76			7.6	7.0	4.7	1.35
Y	09			9.0	7.0		1.35
	15			15.0	12.0		1.35

1) Nominal value, ± 0.1 tolerance

Note: All dimensions are in millimetres

Series 4B – 5B

Interconnections



Model description

ECJ Fixed socket, with two nuts and keyway (J) (back panel mounting)
EGJ Fixed socket, nut fixing, with keyway (J)
FCJ Straight plug with cable clamp and safety ring, keyway (J)
PFJ Fixed socket, with two nuts, cable clamp and keyway (J) (back panel mounting)
PHJ Fixed socket with cable clamp and keyway (J)
PKJ Fixed socket, nut fixing, with cable clamp and keyway (J)
VEJ Fixed socket, nut fixing, with keyway (J), vacuumtight (back panel mounting)
VPJ Fixed socket, nut fixing, with cable clamp and keyway (J), vacuumtight (back panel mounting)

Part number example

FCJ	4B	467	C	L	L	Y	15

Model: page 52

Series: page 52

Type: page 52

Housing:
C = chrome plated brass

Insulator:
L = PEEK

Contact type:
A = male solder
L = female solder

Cable fixing type:
Y = cable clamp

Ø Cable Clamp:
page 52

FCJ.4B.467.CLLY15 Straight plug with cable clamp and safety ring, keyway (J), series 4B, 8kVdc multi high voltage type (7 contacts), chrome plated brass housing, PEEK insulator, female solder contacts.

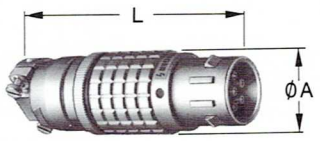
Note: Plugs are fitted with female contacts and sockets with male contacts.

Dimensions

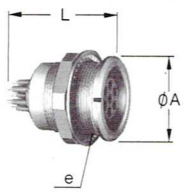
Model	Dim.	Series 4B	Series 5B
FCJ	A	25	35
	L	77	107
EGJ	A	28	40
	e	M25x1	M35x1
	L	38	43

Note: All dimensions are in millimetres

FCJ



EGJ



Models and series

Model	Series 4B	Series 5B
ECJ	●	●
EGJ	●	●
FCJ	●	●
PFJ	●	●
PHJ	●	●
PKJ	●	●
VEJ	●	●
VPJ	●	●

Types

Reference	Series	Contact No	Contact Ø	Contact type: Plug	Contact type: Socket	Us (kV rms) 1)	Us (kV dc) 1)	Us (kV rms) 2)	Us (kV dc) 2)	Ue (kV rms) 3)	Ue (kV dc) 3)	Rated Cur. (A) 4)
460	4B	10	0.9	L	A	3.5	5	5.6	8	8.5	12	3
464		4	0.9	L	A	5.6	8	8.5	12	12.7	18	4
467		7	0.9	L	A	5.6	8	8.5	12	12.7	18	4
474	5B	14	0.9	L	A	5.6	8	8.5	12	12.7	18	4
481		21	0.9	L	A	5.6	8	8.5	12	12.7	18	4

A = male solder contact
L = female solder contact
Note: Values have been measured plug and socket mated

1) As per IEC 130.1 § 14.5 a)
2) As per IEC 130.1 § 14.5 b)
3) As per MIL-STD 1344A method 3001.1
4) As per IEC 512-3

Note: All dimensions are in millimetres

Cable clamp

Reference Type	Reference Ø	Connector Series	Connector Type	Cable dimensions OD1) Max.	Cable dimensions OD1) Min.	Cable dimensions Max.cond Ø
Y	15	4B	460	15	12	0.75
	09		464	9	7	0.75
	15		467	15	12	0.75
	18	5B	474	18	15	0.75
	22		481	22	18	0.75

1)These diameters refer to either the sheath of a multicore cable or a bunch of individual cables.

Other accessories and tooling are available for these series. Please refer to the corresponding sections.
For panel cut-out and torquing of mounting nuts refer to the corresponding sections.

Thermocouples Connectors

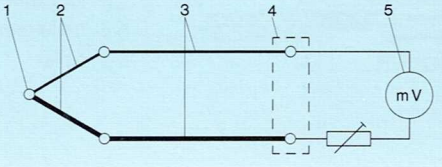
Series S-B

Thermocouples convert thermal energy directly into electrical energy and hence allow for temperature measurement.
A thermocouple consists of two wires of different materials which are welded together at one end. Heating the welded junction (measuring point) creates a thermoelectric voltage the magnitude of which is a function of the difference in temperature between the welded junction itself and the free wire legs which are at ambient temperature (reference point). This voltage can be read on a millivoltmeter.
Because of heat conduction and radiation the free wire legs of a thermocouple are mostly at a somewhat higher than ambient temperature. Therefore they have to be lengthened with compensation leads until an appropriate reference point is reached. To avoid additional thermoelectric voltages in the circuit these leads have to be thermoelectrically equivalent to the thermocouple wires.

Basic Thermocouple Circuit

A connector joins the compensation lead to the thermocouple.
All pairs of different metals demonstrate the thermoelectric effect. In practice, only certain combinations are used because of their specific characteristics 1) stability and reproductibility 2) resistance to corrosion 3) sensitivity: the potential difference created by a temperature difference of 1°C must be high 4) cover a wide temperature range. The types of thermocouples most used are the E, J, K, T, R and S types according to ANSI-MC- 96-1 (1975) (American National Standard Instrument).
Temperature can be measured with a resistance thermometer as well. It operates on the principle of change in electrical resistance of a metal or semiconductor (thermistor) as a function of temperature. The table lists a resistance material of this kind under the heading L.

Type	Thermocouple Material	Environmental conditions and remarks
E	Chromel EP (+) Constantan EN (-)	In vacuum and in inert or oxidizing environment up to 870°C (1600°F) in a protective sheath. Not affected by corrosion when exposed to temperature lower than 0°C (32°F).
J	Iron (magnetic) JP (+) Constantan JN (-)	In vacuum, in inert, oxidizing or reducing environment. Can be used from 0°C to 760°C (32°F to 1400°F) with wires having a OD > 3.25 mm in a closed conventional protective sheath. Not to be used at high temperature in hydrogen-containing atmosphere.
K	Chromel KP (+) Alumel KN (-)	For temperatures higher than those which can be measured with an iron-constantan thermocouple. From 0°C to 1260°C (32°F to 2300°F). In oxidizing environment, low resistance in reducing environment.
T	Copper TP (+) Constantan TN (-)	In vacuum and in inert oxidizing or reducing environment. Mostly used for measurement of temperatures lower than 0°C (32°F). From -184°C to 370°C (-300°F to 700°F).Higher resistance to corrosion in moist environment and at lower temperature than type J.
L	Brass (gold-plated) LP Bronze (gold plated) LN	Temperature measurement with electrical resistance thermometers. From 0°C to 260°C (32°F to 500°F). In inert or oxidizing environment or in hydrogen-containing atmosphere.
R	Platin RP (+) Pt (13%Rh) RN (-)	From 0°C to 1480°C (32°F to 2700°F) with wires having a OD > 0.51 mm in a conventional closed protective sheath.
S	Platin SP (+) Pt (10%Rh) SN (-)	Same characteristics as R type.



1 Measuring point
2 Thermocouple
3 Compensation leads
4 Reference point
5 Millivoltmeter

Conductor diameters according to ANSI-ASTM 586-76

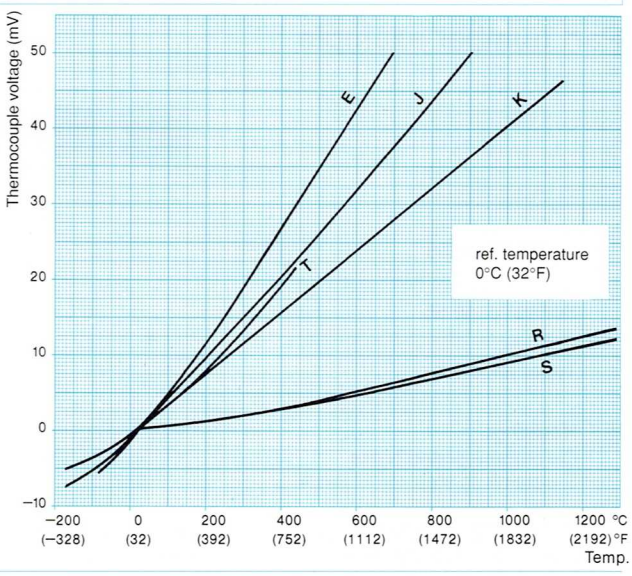
Single thermocouple

Sheath Ø	Conductor Ø	Conductor AWG
0.51	0.10	38
0.81	0.16	34
1.02	0.18	33
1.57	0.32	28
3.17	0.51/0.64	24/22
4.77	0.91	19
6.35	1.29	16
7.90	1.29	16
9.53	1.45	15

Double thermocouple

Sheath Ø	Conductor Ø	Conductor AWG
1.60	0.28	29
3.17	0.57	23
4.77	0.81	20
6.35	0.91	19
7.90	1.02	18

Note: All dimensions are in millimetres



Technical characteristics

Material and treatment

Components		Material (Standard)	Surface treatment (µm)			
			Cu	Ni	Cr	Au
Outer shell and collet nut		Brass (ASTM C 385)	0.5	3	0.3	
		Stainless steel (AISI 303)	no treatment			
Earthing crown		Brass (ASTM C 385)	0.5	3		
		Bronze (ASTM C 544)	0.5	3		
Latching sleeve		Special Brass	0.5	3		
		Stainless steel (AISI 416)	no treatment			
Locking washer		Bronze (ASTM C 521)	0.5	3		
Hexagonal nut		Brass (ASTM C 385)	0.5	3		
		Stainless steel (AISI 303)	no treatment			
Insulator		PEEK (MIL-P-46183)				
		PBTP (MIL-M-24519)				
Contacts	Type E male and female	Chromel/Constantan	no treatment			
	Type J male and female	Iron/Constantan	no treatment			
	Type K male and female	Chromel/Alumel	no treatment			
	Type T male and female	Copper/Constantan	no treatment			
	Type L male	Brass (ASTM C 385)	0.5	3		1.5
	Type L female	Bronze (ASTM C 544)	0.5	3		2.0

The surface treatment standards are as follows:

- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

Mechanical and climatical

Characteristics	Value	Standard	Method
Contact retention force	> 60 N	MIL-STD-1344A	2007.1
Cable retention force[1)]	>100 N	MIL-STD-1344A	2009.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Operat. temperature	– 55°C + 260°C (– 67°F + 500°F)		

1) For models fitted with collet only. Measured with a mineral insulated cable

1N = 0.102 kg

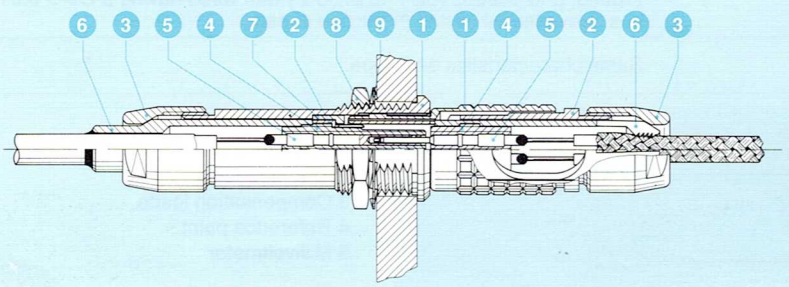
Electrical

Characteristics	Material (Standard)	Value
Contact resistance (IEC 130-1)	Chromel	< 33 mΩ
	Alumel	< 15 mΩ
	Constantan	< 15 mΩ
	Iron	< 7.5 mΩ
	Copper	< 1.5 mΩ
	Brass (ASTM C 385)	< 5 mΩ
	Bronze (ASTM C 544)	< 5 mΩ
Insulation resistance (MIL-STD-1344A/3003.1)	PEEK (MIL-P-46175)	> 10^{12} Ω

Part section showing internal components

Fixed socket

1. shell
2. earthing crown
3. collet nut
4. insulator
5. female contact
6. brazing collet
7. retaining ring
8. hexagonal nut
9. locking washer



Straight plug

1. outer shell
2. latch sleeve
3. collet nut
4. insulator
5. male contact
6. collet

Part number example

FGG	0B	302	C	L	E	N	16

Model: page 55

Series: page 55

Type: page 56

Housing:
C = chrome plated brass
S = stainless steel

Insulator:
L = PEEK
N = PBTP

Contact type: page 56

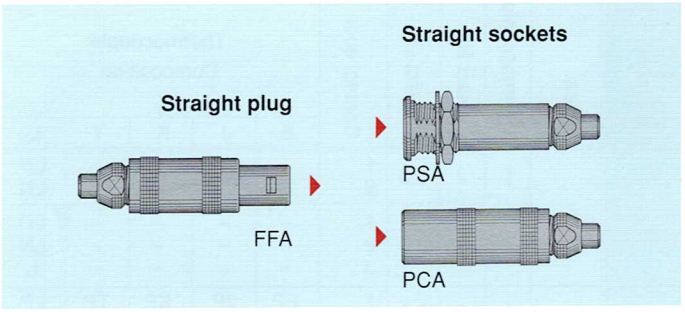
Cable fixing type: page 57

Ø Collet: page 57

FGG.0B.302.CLEN16 Straight plug with key (G) and cable collet, series 0B, with two type E thermocouple contacts, chrome plated brass housing, PEEK insulator, brazing collet for a mineral insulated cable having a max OD of 1.55 mm.

Series S

Interconnections

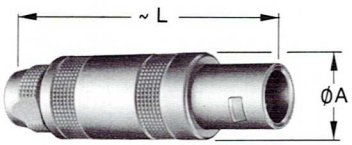


Model description

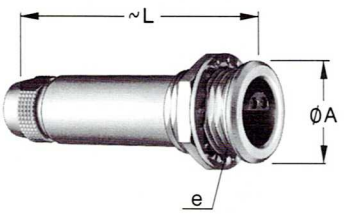
FFA Straight plug with cable collet
PCA Free socket with cable collet
PSA Fixed socket, nut fixing, with cable collet

Models

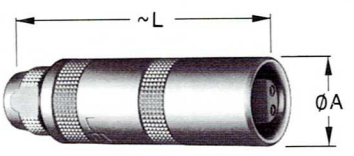
FFA



PSA



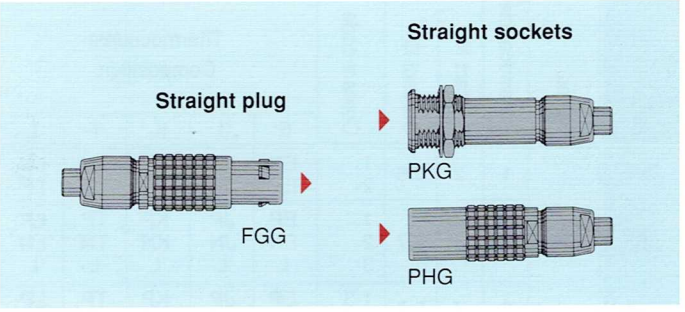
PCA



Model	Dim.	Series		
		0S	1S	2S
FFA	A	9.0	12.0	14.8
	L	34.5	42.5	52.0
PSA	A	10.0	14.0	18.0
	e	M9x0.6	M12x1	M15x1
	L	33.5	40.5	50.0
PCA	A	8.9	11.9	14.8
	L	33.5	40.5	50.0

Series B

Interconnections

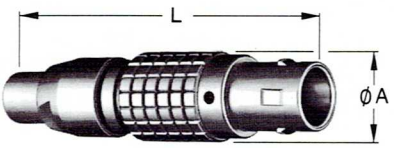


Model description

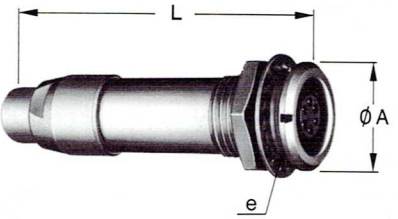
FGG Straight plug with key (G) and cable collet
PHG Free socket with key (G) and cable collet
PKG Fixed socket, nut fixing, with key (G) and cable collet

Models

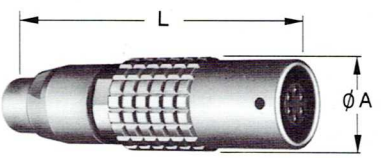
FGG



PKG



PHG



Model	Dim.	Series			
		00	0B	1B	2B
FGG	A	6.4	9.5	12.0	15.0
	L	28.5	40.5	50.0	58.0
PKG	A	–	10.0	14.0	18.0
	e	–	M9x0.6	M12x1	M15x1
	L	–	40.5	47.5	56.0
PHG	A	6.4	9.5	12.5	16.5
	L	27.0	40.5	45.0	51.5

Note : All dimensions are in millimetres

Types (Series S)

Reference	Series	Thermocouple No	Contact No	Contact Ø	Contact code	Thermocouple Composition				
						E	J	K	T	L
302	0S	1	2	0.9	1 2	EN EP	JN JP	KN KP	TN TP	LN LP
303		1	3	0.7	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	0.7	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
302	1S	1	2	1.3	1 2	EN EP	JN JP	KN KP	TN TP	LN LP
303		1	3	0.9	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	0.9	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
903		3	6	0.7	1-3-5 2-4-6	EP EN	JP JN	KP KN	TP TN	LP LN
302	2S	1	2	1.6	1 2	EN EP	JN JP	KN KP	TN TP	LN LP
303		1	3	1.3	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	1.3	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
903		3	6	1.3	1-3-5 2-4-6	EP EN	JP JN	KP KN	TP TN	LP LN

For types 303 and 903 the third contact is used to guarantee the ground conductivity and for earthing of parasite currents

Note: All dimensions are in millimetres

Types (series B)

Reference	Series	Thermocouple No	Contact No	Contact Ø	Contact code	Thermocouple Composition				
						E	J	K	T	L
302	00	1	2	0.5	1 2	– –	– –	– –	– –	LP LN
303		1	3	0.5	1 2 3	– – –	– – –	– – –	– – –	LP LN L
302	0B	1	2	0.9	1 2	EP EN	JP JN	KP KN	TP TN	LP LN
303		1	3	0.9	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	0.7	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
302	1B	1	2	1.3	1 2	EP EN	JP JN	KP KN	TP TN	LP LN
303		1	3	1.3	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	0.9	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
903		3	6	0.7	1-3-5 2-4-6	EP EN	JP JN	KP KN	TP TN	LP LN
302	2B	1	2	2.0	1 2	EP EN	JP JN	KP KN	TP TN	LP LN
303		1	3	1.6	1 2 3	EP EN L	JP JN L	KP KN L	TP TN L	LP LN L
902		2	4	1.3	1-3 2-4	EP EN	JP JN	KP KN	TP TN	LP LN
903		3	6	1.3	1-3-5 2-4-6	EP EN	JP JN	KP KN	TP TN	LP LN

Housing

Ref.	Material (Standard)	Note
C	Brass (ASTM C 385)	●
S	St.Steel (AISI 303 or 316L)	○

● Available
○ On request

Insulator

Ref.	Material (Standard)	Note
L	PEEK (MIL-P-46183)	●
N	PBTP	●

Contacts

Ref.	Material	Polarity	Note
E	Chromel	EP (+)	○
	Constantan	EN (-)	
J	Iron	JP (+)	○
	Constantan	JN (-)	
K	Chromel	KP (+)	○
	Alumel	KN (-)	
T	Copper	TP (+)	○
	Constantan	TN (-)	
L	Brass	LP	●
	Bronze	LN	

Collets (Series S)

Reference		Series	Cable OD	
Type	Ø		max.	min.
F	03	0S	0.27	0.15
	07		0.60	0.30
	12		1.10	0.70
	17		1.60	1.20
	22		2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
F	17	1S	1.60	1.20
	22		2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
	52		5.00	4.10
	61		6.00	5.20
F	22	2S	2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
	52		5.00	4.10
	67		6.50	5.60

Reference		Series	Cable OD	
Type	Ø		max.	min.
G	03	0S	0.27	0.15
	07		0.60	0.30
	12		1.10	0.70
	17		1.60	1.20
	22		2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
G	17	1S	1.60	1.20
	22		2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
	52		5.00	4.10
	61		6.00	5.20
G	22	2S	2.10	1.50
	27		2.50	2.00
	34		3.30	2.50
	42		4.10	3.10
	52		5.00	4.10
	67		6.50	5.60

Reference		Series	Cable OD
Type	Ø		max.
N	03	0S	0.25
	07		0.65
	12		1.15
	17		1.65
	22		2.15
	27		2.65
	34		3.35
	42		4.15
N	17	1S	1.65
	22		2.15
	27		2.65
	34		3.35
	42		4.15
	52		5.15
	61		6.05
N	22	2S	2.15
	27		2.65
	34		3.35
	42		4.15
	52		5.15
	67		6.65

Reference		Series	Cable OD
Type	Ø		max.
P	03	0S	0.25
	07		0.65
	12		1.15
	17		1.65
	22		2.15
	27		2.65
	34		3.35
	42		4.15
P	17	1S	1.65
	22		2.15
	27		2.65
	34		3.35
	42		4.15
	52		5.15
	61		6.05
P	22	2S	2.15
	27		2.65
	34		3.35
	42		4.15
	52		5.15
	67		6.65

Reference		Series	Cable OD
Type	Ø		max.
R	03	0S	0.25
	07		0.65
	12		1.15
	17		1.65
	22		2.15
	27		2.65
R	17	1S	1.65
	22		2.15
	27		2.65
	34		3.35

Note: All dimensions are in millimetres

Collets (Series B)

Reference		Series	Cable OD	
Type	Ø		max.	min.
F	21	0B	2.1	1.5
	31		3.0	2.1
	42		4.0	3.1
	52		5.0	4.1
F	27	1B	2.5	2.0
	31		3.0	2.1
	42		4.0	3.1
	52		5.0	4.1
	62		6.0	5.1
F	31	2B	3.0	2.1
	52		5.0	4.1
	72		7.0	6.1
	82		8.0	7.1

Reference		Series	Cable OD
Type	Ø		max.
N	06	0B	0.55
	12		1.15
	16		1.55
	21		2.05
	26		2.55
	33		3.25
	49		4.85
N	21	1B	2.05
	26		2.55
	33		3.25
	49		4.85
	66		6.55
N	33	2B	3.25
	49		4.85
	66		6.55
	81		8.05

Notes:

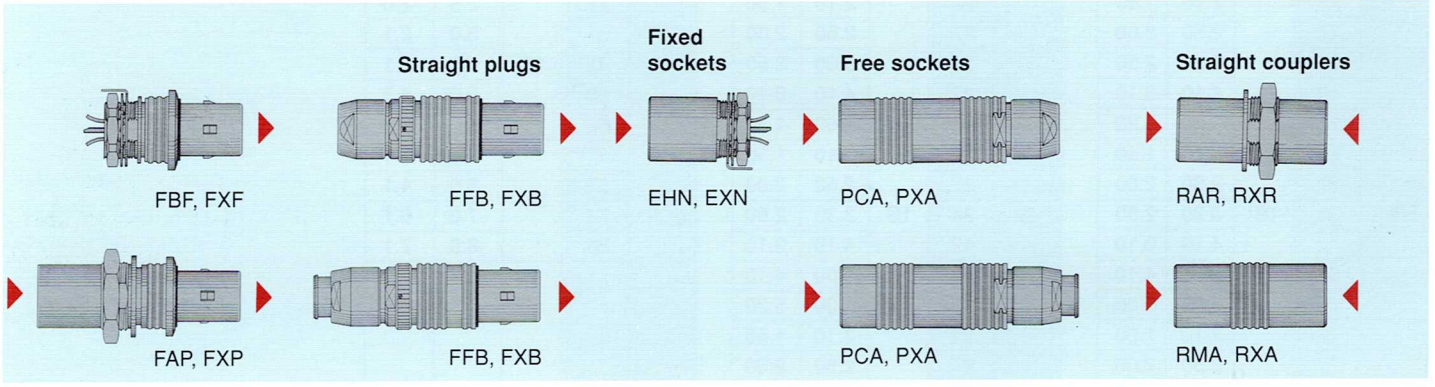
Types N, P and R are for brazing onto mineral insulated cables.

Other accessories and tooling can be used for thermocouple connectors. Refer to the corresponding sections.
For panel cut-out and torquing of mounting nut refer to the corresponding sections.

Series 4A

The series 4 A of connectors are triaxial (75 Ω). This connector family was specially developed to link professional video cameras to their control units. The wide range of models meets various needs of the television and cinema industries. In addition, each plug has a silicone gasket which when mated, provides a seal against the socket, thereby providing protection against moisture (this meets the requirement of IP 61 according to IEC 529).

Interconnections



Model description

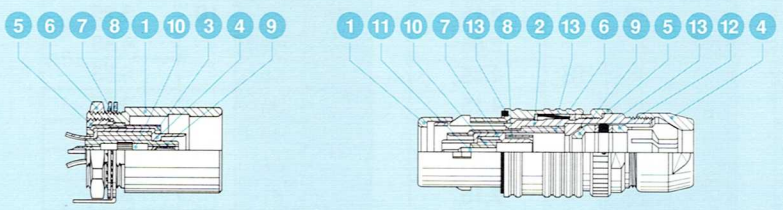
EHN Fixed socket with tag, nut fixing, visible shell
EXN Fixed socket with tag, nut fixing, visible shell (with earthing crown)
FAP Straight plug, latching, nut fixing, round flange and socket
FXP Straight plug, latching, nut fixing, round flange and socket (with earthing crown)
FBF Fixed plug, nut fixing, with tag and round flange
FXF Fixed plug, nut fixing, with tag and round flange (with earthing sleeve)

FFB Straight plug with safety ring and cable collet
FXB Straight plug with safety ring and cable collet (with earthing sleeve)
FFB Straight plug with safety ring, cable collet and nut for fitting a strain relief
FXB Straight plug with safety ring, cable collet and nut for fitting a strain relief (with earthing sleeve)
PCA Free socket with cable collet
PXA Free socket with cable collet (with earthing crown)

PCA Free socket with cable collet and nut for fitting a strain relief
PXA Free socket with cable collet and nut for fitting a strain relief (with earthing crown)
RAR Fixed coupler, nut fixing, visible shell
RXR Fixed coupler, nut fixing, visible shell (with earthing crown)
RMA Free coupler
RXA Free coupler (with earthing crown)

Part section showing internal components

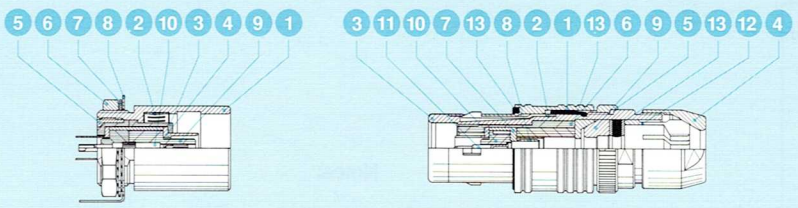
without earthing system (EHN-FFB)



Fixed socket
1. outer shell
2. earthing crown
3. intermediate insulator
4. female intermediate contact
5. castellated nut
6. hexagonal nut
7. locking washer
8. earthing washer
9. insulator
10. female contact

Straight plug
1. outer shell
2. latch sleeve
3. inner shell
4. collet nut
5. safety ring
6. intermediate insulator
7. male intermediate cont.
8. crimp ferrule
9. earthing cone
10. insulator
11. male contact
12. collet
13. gland

with earthing system (EXN-FXB)



Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)						
		Chrome			Nickel		Black chrome[1]	
		Cu	Ni	Cr	Cu	Ni	Ni	Cr
Outer shell, collet nut and safety ring	Brass (ASTM C 385)	0.5	3	0.5	0.5	15	1	2
Latch sleeve	Stainless steel	no treatment						
Earthing crown	Cu-Be (FS-QQ-C-530)	Cu: 0.5 µm + Ni: 3 µm + Au: 0.15 min. µm						
Crimp ferrule	Copper (ASTM C 187)	Cu: 0.5µm + Ni: 3µm						
Locking washer	Bronze (ASTM C 521)	Cu: 0.5µm + Ni: 3µm						
Other metallic parts	Brass (ASTM C 385)	Cu: 0.5µm + Ni: 3µm						
Sealing gasket	Silicone rubber (ASTM D.2000)							
Insulators	PTFE (ASTM D 1457-83)							
Male intermediate contact	Cu-Be (FS-QQ-C-530)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm						
Female intermediate contact	Brass (ASTM C 385)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm						
Male crimp contact	Brass (ASTM C 345)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm						
Male solder contact	Brass (ASTM C 385)	Cu: 0.5 µm + Ni: 3 µm + Au: 1.5 µm						
Female solder and crimp contact	Cu-Be (FS-QQ-C-530)	Cu: 0.5 µm + Ni: 3 µm + Au: 2.0 µm						

The surface treatment standards are as follows:

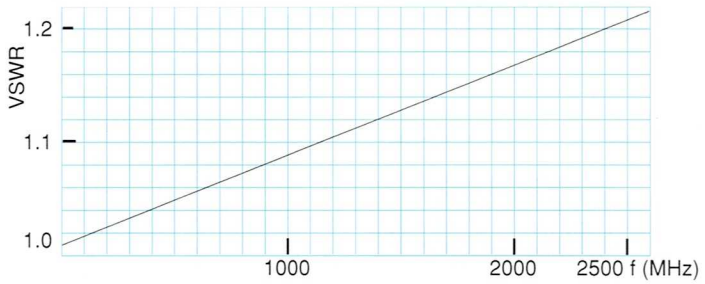
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

1) with a protective lacquer of 8µm minimum.

Mechanical and climatical

Characteristics	Value	Standard	Method
Cable retention force[1]	500 N	MIL-STD-1344A	2009.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Degree of protection	IP 61	IEC 529	
Operating temperature	– 55°C + 230°C (– 67°F + 446°F)		

1) Average value
1N = 0.102 Kg



Standing wave ratio: Mated FFB plug and PCA socket

Electrical

Characteristics	Value	Standard	Method
Impedance	75 Ω		§ 14.5
Operating voltage int. screen/contact	1 kVrms at 50 Hz	IEC 130-1	§ 14.5
Operating voltage screen/screen	2 kVrms at 50 Hz	IEC 130-1	
Test voltage int.screen/contact	3 kVrms at 50 Hz	MIL-STD-1344A	3001.1
Test voltage screen/screen	7 kVrms at 50 Hz	MIL-STD-1344A	3001.1
Rated current	12 A	IEC 512-3	
Contact resistance	< 3 mΩ	MIL-STD-202	307
Resistance int. screen/contact.	< 1 mΩ	MIL-STD-202	307
Insulation resistance int. screen/contact	$>10^{12}$ Ω	MIL-STD-1344A	3003.1
Insulation resistance screen/screen	$>10^{12}$ Ω	MIL-STD-1344A	3003.1
VSWR range below 1.2	2.5 GHz		
VSWR (f = GHz)	1.01+0.076 f	MIL-STD-1344A	3005
Shell to shell conductivity [1]	< 1mΩ	MIL-STD-1344A	3007

1) For models with earthing system

Recommended cables

Group					Reference	
1	2	3	4	5		
●					8232	Belden
●					HF-2426	Dätwyler
	●				12765700	F&G
		●			9267	Belden
			●		10069-C-G20	BIW
				●	12766400	F&G

Group				Reference	
6	7	8	9		
●				12766601	F&G
●				8233	Belden
	●			9232	Belden
		●		10070-C-G14	BIW
		●		12766700	F&G
			●	4.6/1.0 EFTX	Fujikura

Part number example

FFB	4A	675	C	T	C	C	95

Model: page 60

Series: 4A

Type: 675 = triaxial 75Ω

Housing:
C = chrome plated brass
N = nickel plated brass
K = black chrome plated brass

Insulator:
T = PTFE

Variant[1)]

Ø Collet

Cable fixing type:
C = cable collet

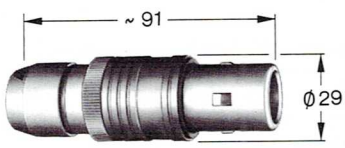
Contact type:
A = male solder
C = male crimp
L = female solder
R = female crimp
M = female-female

FFB.4A.675.CTCC95 Straight plug with safety ring and cable collet, series 4A. 75 Ω triaxial type, chrome plated brass housing, PTFE insulator, male crimp contact, C type collet for a group 3 cable.

Note:
1) A 'Z' in the variant position of the part number indicates that this model is fitted with a cable collet for fitting a strain relief. The strain relief is ordered separately as shown on page 61 opposite.

Models

FFB-FXB

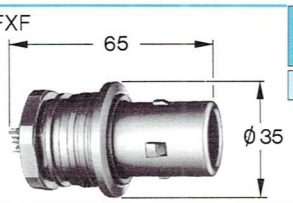


Part Number	Cable group
FFB.4A.675.CTCC90	9
FFB.4A.675.CTCC95	3
FFB.4A.675.CTCC96	2
FFB.4A.675.CTCC97	1
FFB.4A.675.CTCC10	4
FFB.4A.675.CTCC11	5
FFB.4A.675.CTCC12	7
FFB.4A.675.CTCC13	8
FFB.4A.675.CTCC14	6

FFB-FXB

Part Number	Cable group
FFB.4A.675.CTCC90Z	9
FFB.4A.675.CTCC95Z	3
FFB.4A.675.CTCC96Z	2
FFB.4A.675.CTCC97Z	1
FFB.4A.675.CTCC10Z	4
FFB.4A.675.CTCC11Z	5
FFB.4A.675.CTCC12Z	7
FFB.4A.675.CTCC13Z	8
FFB.4A.675.CTCC14Z	6

FBF-FXF

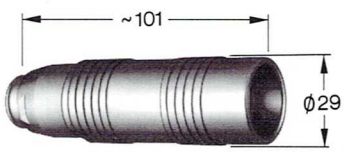


Part Number	Weight (g)
FBF.4A.675.CTA	154

PCA-PXA

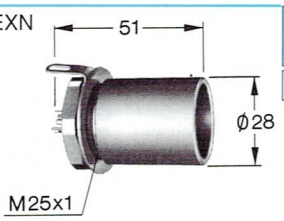
Part Number	Cable group
PCA.4A.675.CTRC90	9
PCA.4A.675.CTRC95	3
PCA.4A.675.CTRC96	2
PCA.4A.675.CTRC97	1
PCA.4A.675.CTRC10	4
PCA.4A.675.CTRC11	5
PCA.4A.675.CTRC12	7
PCA.4A.675.CTRC13	8
PCA.4A.675.CTRC14	6

PCA-PXA



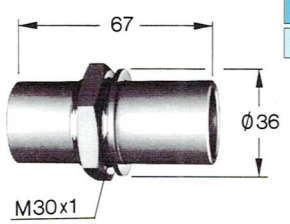
Part Number	Cable group
PCA.4A.675.CTRC90Z	9
PCA.4A.675.CTRC95Z	3
PCA.4A.675.CTRC96Z	2
PCA.4A.675.CTRC97Z	1
PCA.4A.675.CTRC10Z	4
PCA.4A.675.CTRC11Z	5
PCA.4A.675.CTRC12Z	7
PCA.4A.675.CTRC13Z	8
PCA.4A.675.CTRC14Z	6

EHN-EXN



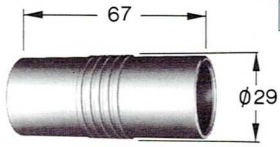
Part Number	Weight (g)
EHN.4A.675.CTL	115

RAR-RXR



Part Number	Weight (g)
RAR.4A.675.CTM	183

RMA-RXA



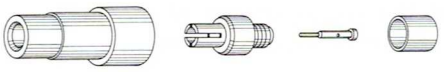
Part Number	Weight (g)
RMA.4A.675.CTM	156

Notes:
The above mentioned part numbers refers to standard manufactured connectors. On request, other constructions are available and can be ordered using the 'Part number example' table For ordering a model fitted with the earthing system, simply use the three letter model reference having the X (Ex: FFB.4A... becomes FXB.4A...).
The strain relief to fit on the collet nut for fitting a strain relief is ordered separately as shown on page 61 opposite.

All dimensions are in millimetres.

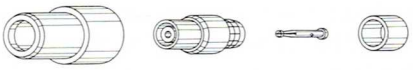
Accessories

Triax sub-assembly for plugs with cable collet



Cable group	Part number male insert assembly	Part number male contact	Part number crimp ferrule
1-3-4	FFS.4A.670.ZTC	FFA.4A.570.BM	FFS.4A.160.DA
2	FFS.4A.671.ZTC	FFA.4A.570.BM	FFS.4A.161.DA
5-6	FFS.4A.672.ZTC	FFA.4A.571.BM	FFS.4A.161.DA
6 Belden	FFS.4A.673.ZTC	FFA.4A.571.BM	FFS.4A.161.DA
7	FFS.4A.674.ZTC	FFA.4A.572.BM	FFS.4A.161.DA
8	FFS.4A.675.ZTC	FFA.4A.572.BM	FFS.4A.161.DA
8 F&G	FFS.4A.676.ZTC	FFA.4A.573.BM	FFS.4A.162.DA
9	FFS.4A.677.ZTC	FFA.4A.570.BM	FFS.4A.163.DA

Triax sub-assembly for sockets with cable collet



Cable group	Part number female insert assembly	Part number female contact	Part number crimp ferrule
1-3-4	PCS.4A.670.ZTR	PCA.4A.670.BC	FFS.4A.160.DA
2	PCS.4A.671.ZTR	PCA.4A.670.BC	FFS.4A.161.DA
5-6	PCS.4A.672.ZTR	PCA.4A.671.BC	FFS.4A.161.DA
6 Belden	PCS.4A.673.ZTR	PCA.4A.671.BC	FFS.4A.161.DA
7	PCS.4A.674.ZTR	PCA.4A.672.BC	FFS.4A.161.DA
8	PCS.4A.675.ZTR	PCA.4A.672.BC	FFS.4A.161.DA
8 F&G	PCS.4A.676.ZTR	PCA.4A.673.BC	FFS.4A.162.DA
9	PCS.4A.677.ZTR	PCA.4A.670.BC	FFS.4A.163.DA

Collets

Cable group	Part Number
1	FFA.4A.797.CNN
2	FFA.4A.796.CNN
3	FFA.4A.795.CNN
4	FFA.4A.710.CNN
5	FFA.4A.711.CNN
6	FFA.4A.714.CNN
7	FFA.4A.712.CNN
8	FFA.4A.713.CNN
9	FFA.4A.790.CNN

Strain relief with cap for plugs and free sockets

Part Number	For models
GMF.4A.080.145.NN	FFB
GMP.4A.080.145.NN	PCA

This strain relief can be used for all 4A cable groups (Ø min 7 mm, Ø max 16 mm).

Cap

Part Number	Cable group
GCD.4A.088.LN	1-2

On request this cap is available for other cable groups.

Note: All dimensions are in millimetres

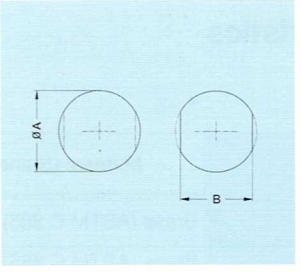
Tooling

Crimping tool with die

Part Number	Cable group
DPA.99.237.5K	1-3-4
DPD.99.231.2K	2-5-6-7
DPD.99.301.3K	8
DPD.99.237.5K	9

Cut-out

Panel cut-out



Model	Dimensions	
	A	B
EHN-EXN	26	22.5
FAP-FXP	31	28.7
FBF-FXF	26	22.2
RAR-RXR	31	28.2

Torque for mounting nuts: 20 Nm
1N = 0.102 Kg

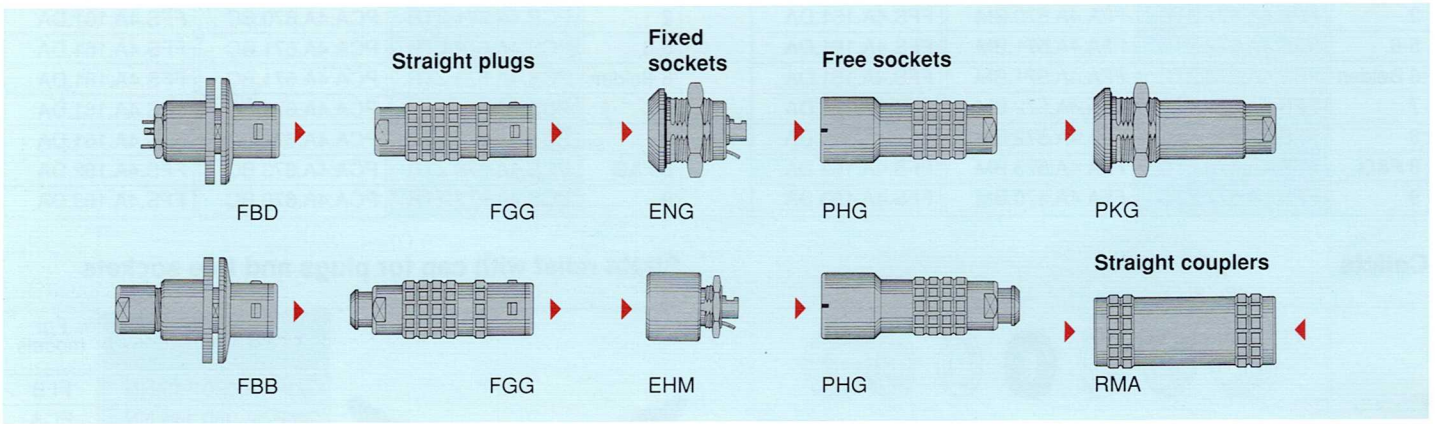
Other accessories and tooling are also available for the series 4A. Please refer to the 'Accessories' section.

Note: All dimensions are in millimetres

Series 4M

This triaxial series of connectors, available in both 50 Ω or 75 Ω, is equipped with housings which provide environmental protection. They are designed for professional video cameras that are used both indoors and outdoors to link the cameras with their control units. The wide range of models meet the requirements of the television and cinema industries. The construction of these connectors is similar to the series E. This gives them a significant degree of protection in accordance with IP 66, standard IEC 529. In addition, the outershells are provided with a mechanical guide which prevents any interruption of signals which might be due to insert rotation.

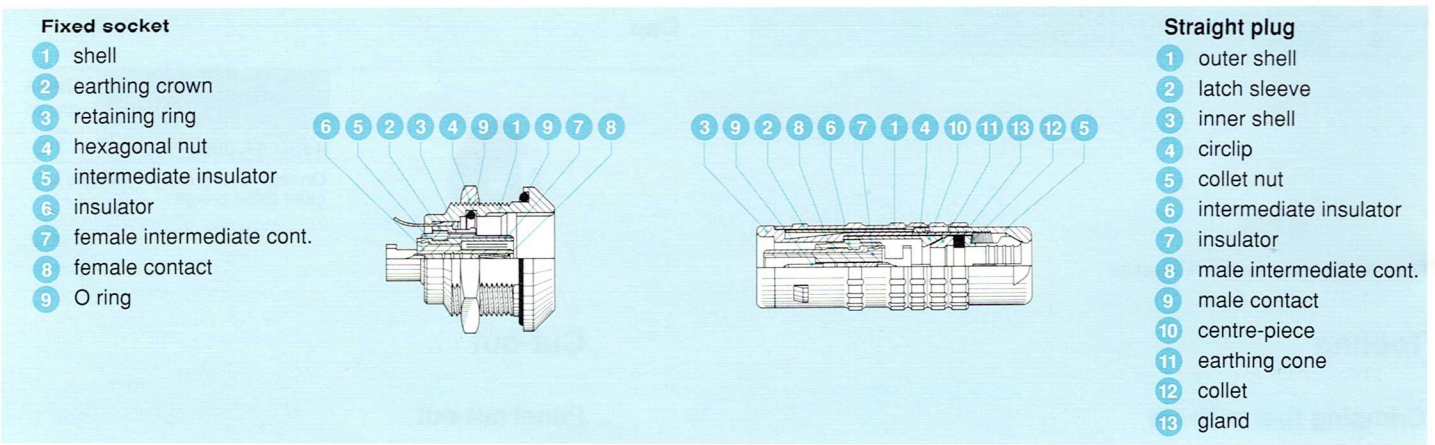
Interconnections



Model description

EHM Fixed socket with tag, visible shell
ENG Fixed socket, nut fixing, with tag
FBB Straight plug with round flange and cable collet, (screw fixing)
FBD Straight plug with round flange (screw fixing)
FGG Straight plug with cable collet
FGG Straight plug with cable collet and nut for fitting a strain relief
PHG Free socket with cable collet
PHG Free socket with cable collet and nut for fitting a strain relief
PKG Fixed socket, nut fixing with cable collet
RMA Free coupler

Part section showing internal components



Technical characteristics

Material and treatment

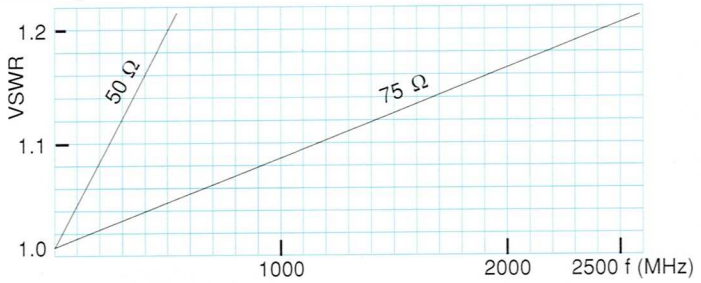
Component	Material (Standard)	Surface treatment(µm)			
		Cu	Ni	Cr	Au
Outer shell, collet nut and circlip	Brass (ASTM C 385)	0.5	3	0.3	
Earthing crown	Brass (ASTM C 385)	0.5	3		1.5
Latch sleeve	Special brass	0.5	3	0.3	
Inner sleeve	Brass (ASTM C 385)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Gland and O ring	Silicone rubber (ASTM D.200)				
Insulators	PTFE (ASTM D 1457-83)				
Male intermediate contact	Brass (ASTM C 385)	0.5	3		1.5
Female intermediate contact	Bronze (ASTM C 544)	0.5	3		2.0
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1.

Mechanical and climatical

Characteristics	Value	Standard	Method
Cable retention force [1]	500 N	MIL-STD-1344A	2009.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Degree of protection	IP 66	IEC 529	
Operating temperature	– 55°C + 230°C (– 67°F + 446°F)		

1) Average value
1N = 0.102 Kg



Standing wave ratio : Mated FGG plug and PHG socket

Electrical

Characteristics	Value		Standard	Method
Impedance	50 Ω	75 Ω		
Operating voltage int.screen/contact	0.9 kV	0.7kV	IEC 130-1	§ 14.5
Operating voltage screen/screen	0.6 kV	0.5 kV	IEC 130-1	§ 14.5
Test voltage int. screen/contact	2.6 kV	2.2 kV	MIL-STD-1344A	3001.1
Test voltage screen/screen	1.8 kV	1.5 kV	MIL-STD-1344A	3001.1
Rated current	26 A	15 A	IEC 512-3	
Contact resistance	< 2.5 mΩ	<3 mΩ	MIL-STD-202	307
Resistance contact/screen int.	< 0.5 mΩ	<1 mΩ	MIL-STD-202	307
Insulating resistance contact/screen int	$>10^{12}\Omega$	$>10^{12}\Omega$	MIL-STD-1344A	3003.1
Insulating resistance screen/screen	$>10^{12}\Omega$	$>10^{12}\Omega$	MIL-STD-1344A	3003.1
Frequency range VSWR <. 1.2	0.5 GHz	1.3 GHz		
VSWR (f en GHz)	1.01 +0.38f	1.01 +0.14f	MIL-STD-1344A	3005

Note : Operating and test voltage are kV r ms and have been measured at 50 Hz frequency

Recommended cables

Group 1	2	3	4	5	Reference	
●					9222	Belden
	●				11820	Filotex
	●				21.204	Amphénol
		●			8232	Belden
		●			HF-2426	Dätwyler
			●		9267	Belden
			●		10069-C-G20	BIW
				●	HF-2318	Dätwyler

Group 6	7	8	9	0	Reference	
●					12766400	F&G
	●				8233	Belden
		●			9888	Belden
			●		T1894	BICC
			●		9232	Belden
			●		9192	Belden
				●	10070-C-G14	BIW
				●	12766700	F&G

Part number example

FGG	4M	675	C	T	A	C	80	

Model: page 64

Series: 4M

Type: 650 = triaxial (50Ω)
675 = triaxial (75Ω)

Housing:
C = chrome plated brass
N = nickel plated brass

Insulator:
T = PTFE

Variant [1]

Ø Collet

Cable fixing type:
C = cable collet

Contact type:
A = male solder
L = female solder
M= female-female

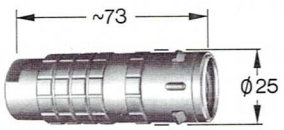
FGG.4M.675.CTAC80 Straight plug with key (G) and cable collet, series 4M, triaxial 75 Ω type, chrome plated brass shell, PTFE insulators, male solder contact, C type collet for a group 3 cable.

Note:
As a standard, plugs are fitted with male contacts and sockets with female contacts. On request all plugs can be fitted with female contacts and sockets with male.

Sockets have a gold plated earthing crown
1) A 'Z' in the variant position of the part number indicates that the model is fitted with a nut for fitting a strain relief. The strain relief is ordered separately as explained in the 'Accessories' section.

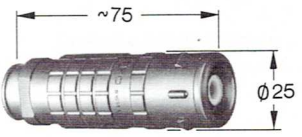
Models

FGG



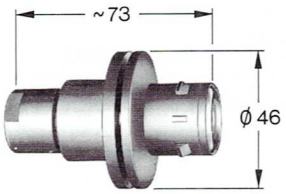
Part Number	Cable group
FGG.4M.650.CTAC65	1
FGG.4M.650.CTAC75	2
FGG.4M.650.CTAC10	5
FGG.4M.650.CTAC12	8
FGG.4M.675.CTAC80	3
FGG.4M.675.CTAC95	4
FGG.4M.675.CTAC11	6
FGG.4M.675.CTAC12	7
FGG.4M.675.CTAC13	9
FGG.4M.675.CTAC14	0

FGG



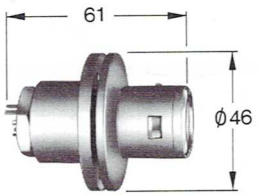
Part Number	Cable group
FGG.4M.650.CTAC10Z	5
FGG.4M.650.CTAC12Z	8
FGG.4M.675.CTAC80Z	3
FGG.4M.675.CTAC95Z	4
FGG.4M.675.CTAC11Z	6
FGG.4M.675.CTAC12Z	7
FGG.4M.675.CTAC13Z	9
FGG.4M.675.CTAC14Z	0

FBB



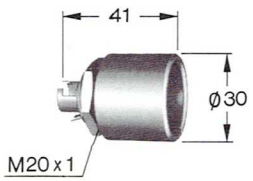
Part Number	Cable group
FBB.4M.650.CTAC65	1
FBB.4M.650.CTAC75	2
FBB.4M.650.CTAC10	5
FBB.4M.650.CTAC12	8
FBB.4M.675.CTAC80	3
FBB.4M.675.CTAC95	4
FBB.4M.675.CTAC11	6
FBB.4M.675.CTAC12	7
FBB.4M.675.CTAC13	9
FBB.4M.675.CTAC14	0

FBD



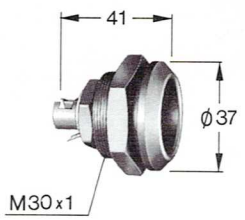
Part Number	Weight (g)
FBD.4M.650.CTA	232
FBD.4M.650.CTL	231
FBD.4M.675.CTA	231
FBD.4M.675.CTL	230

EHM



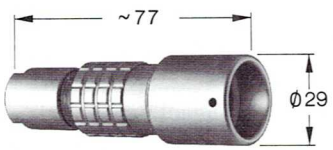
Part Number	Weight (g)
EHM.4M.650.CTA	80
EHM.4M.650.CTL	80
EHM.4M.675.CTA	80
EHM.4M.675.CTL	80

ENG



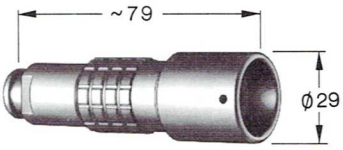
Part Number	Weight (g)
ENG.4M.650.CTA	100
ENG.4M.650.CTL	100
ENG.4M.675.CTA	100
ENG.4M.675.CTL	100

PHG



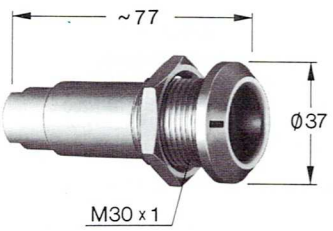
Part Number	Cable group
PHG.4M.650.CTLC65	1
PHG.4M.650.CTLC75	2
PHG.4M.650.CTLC10	5
PHG.4M.650.CTLC12	8
PHG.4M.675.CTLC80	3
PHG.4M.675.CTLC95	4
PHG.4M.675.CTLC11	6
PHG.4M.675.CTLC12	7
PHG.4M.675.CTLC13	9
PHG.4M.675.CTLC14	0

PHG



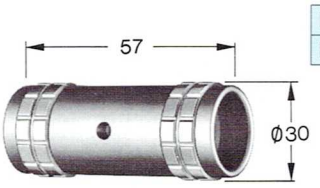
Part Number	Cable group
PHG.4M.650.CTLC10Z	5
PHG.4M.650.CTLC12Z	8
PHG.4M.675.CTLC80Z	3
PHG.4M.675.CTLC95Z	4
PHG.4M.675.CTLC11Z	6
PHG.4M.675.CTLC12Z	7
PHG.4M.675.CTLC13Z	9
PHG.4M.675.CTLC14Z	0

PKG



Part Number	Cable group
PKG.4M.650.CTLC65	1
PKG.4M.650.CTLC75	2
PKG.4M.650.CTLC10	5
PKG.4M.650.CTLC12	8
PKG.4M.675.CTLC80	3
PKG.4M.675.CTLC95	4
PKG.4M.675.CTLC11	6
PKG.4M.675.CTLC12	7
PKG.4M.675.CTLC13	9
PKG.4M.675.CTLC14	0

RMA



Part Number	Weight (g)
RMA.4M.650.CTM	150
RMA.4M.675.CTM	148

Other accessories and tooling are available for the series 4M connectors. Please refer to the corresponding sections.
For panel cut-out and torquing of mounting nuts refer to the corresponding section.

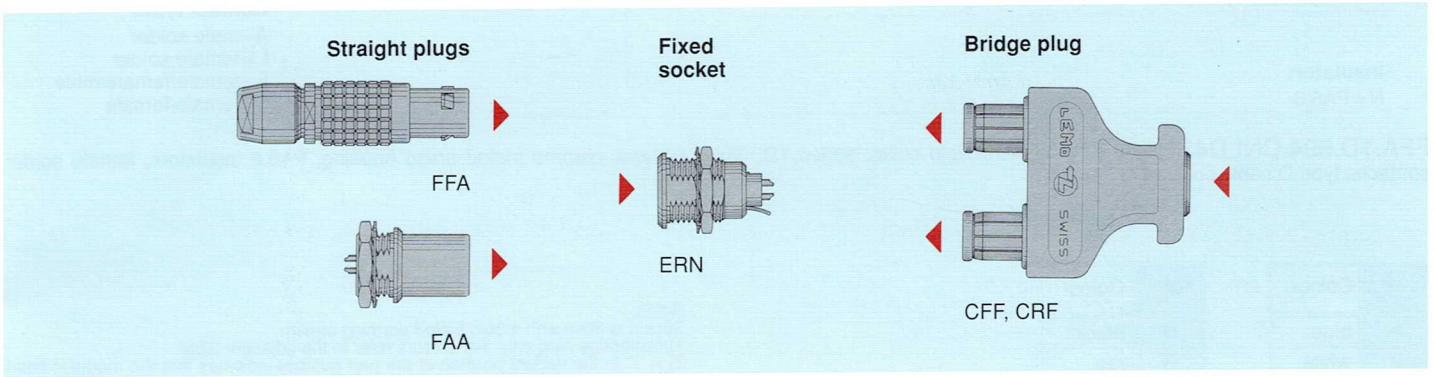
Notes:
The above mentioned part numbers refer to standard manufactured connectors. On request, other constructions are available and can be ordered using the 'Part number example' table.
Strain reliefs to fit on models with a strain relief collet nut should be ordered separately as explained in the 'Accessories' section.

All dimensions are in millimetres

Series 1D

The QUADRAX connectors of the series 1D are connectors with four concentric contacts ready to solve any kind of stereo patch panel problems.
Specifically developed for a European radio and television network, this new connector type allows 'blind' mating without taking care of contact positioning but with the full mating security of the LEMO 'Self-latching' system.
As for coaxial or triaxial types, quadrax connectors can also be fitted on panel in 'star' configuration for switching a single signal to different outputs.
In order to enable the user to create his own coding system, bridge plug housings, double panel washers, insulating washers as well as cable strain reliefs are available in nine colours.

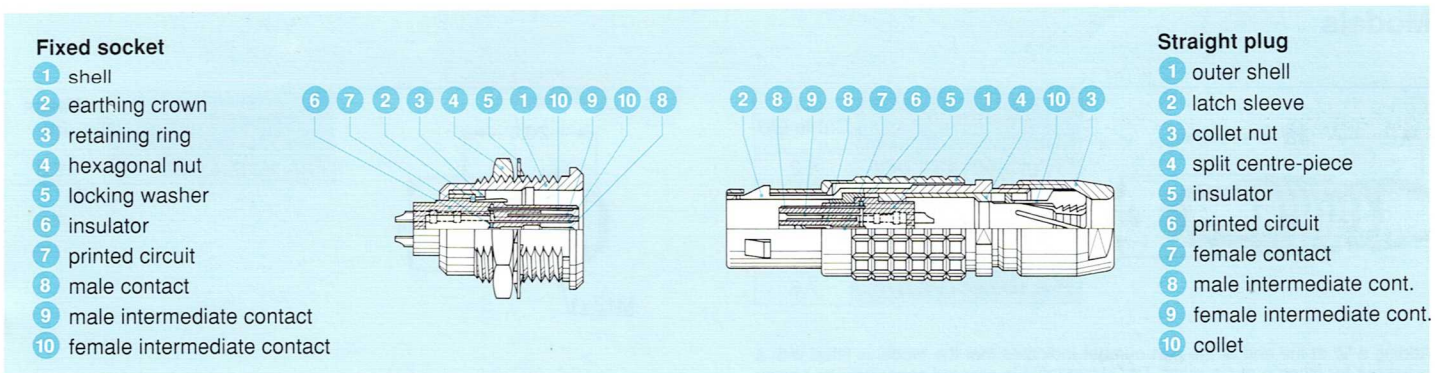
Interconnections



Model description

FAA Straight plug, nut fixing, non-latching
FFA Straight plug with cable collet
ERN Fixed socket, nut fixing, with tag
CFF Bridge plug with two non-latching plugs
CRF Bridge plug with two non-latching plugs and one monitoring socket

Part section showing internal components



Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	
Earthing crown	Bronze (ASTM C 544)	0.5	3		1.5
Latch sleeve	Special brass	0.5	3		
Locking washer	Bronze (ASTM C 521)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PA6.6				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0
Male intermediate cont.	Brass (ASTM C 385)	0.5	3		1.5
Female intermed.cont.	Bronze (ASTM C 544)	0.5	3		2.0

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C320B
- Gold MIL-G-45204C type I, class 1

Mechanical and climatical

Characteristics	Value	Standard	Method
Endurance	>1000 cycles	MIL-STD-1344A	2016
Temperature range	– 55°C + 140°C (– 67°F + 284°F)		

Electrical

Characteristics	Value	Standard	Method
Operating voltage	0.14 kVrms	IEC 130-1	§14.5
Test voltage	0.42 kVrms	MIL-STD-1344A	3001.1
Rated current	0.5 A	IEC 512-3	
Contact resistance	< 20 mΩ	MIL-STD-202	307
Insulation resistance	$>10^{11}\Omega$	MIL-STD-1344A	3003.1

Part number example

FFA	1D	694	C	N	L	D	42	

Model: see below

Series: 1D

Type: 694 = Quadrax

Housing:
C = chrome plated brass
P = Polyamide 6)[1)]

Insulator:
N = PA6.6

Contact type:
A = male solder
L = female solder
F = female/female/male
M = female/female

Cable fixing type:
D = cable collet

Ø Collet

Variant [2)]

FFA.1D.694.CNLD42 Straight plug with cable collet, series 1D, Quadrax type, chrome plated brass housing, PA6.6 insulators, female solder contacts, type D cable collet of 4.2 mm dia.

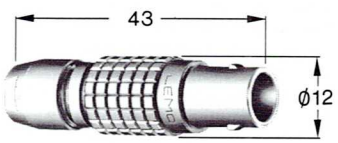
Ref.	Colour
A	blue
B	white
G	grey
J	yellow
M	brown

Ref.	Colour
N	black
R	red
S	orange
V	green

Notes:
Socket is fitted with a gold plated earthing crown.
1) For bridge plug only. For colours refer to the adjacent table.
2) A 'Z' in the variant position of the part number indicates that the model is fitted with a collet nut for fitting a strain relief. The strain relief is ordered separately as explained in the 'Accessories' section.
This position is also used to specify the bridge plug housing colour as shown in the adjacent table.

Models

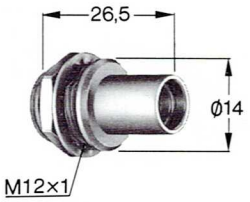
FFA



Part Number	max Cable OD
FFA.1D.694.CNLD42	4.2
FFA.1D.694.CNLD52	5.2
FFA.1D.694.CNLD62	6.2
FFA.1D.694.CNLD72	7.2
FFA.1D.694.CNLD76	7.6

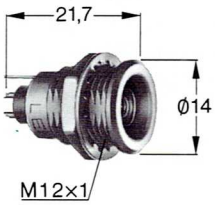
Adding a 'Z' at the end of the part number indicates that the model is fitted with a collet nut for fitting a strain relief. The strain relief is ordered separately as shown in the 'Accessories' section.

FAA



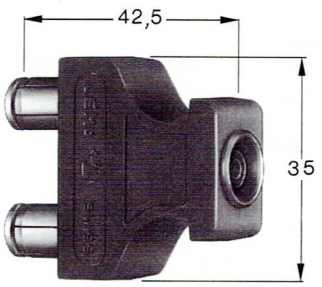
Part Number	Weight (g)
FAA.1D.694.CNL	12.3

ERN



Part Number	Weight (g)
ERN.1D.694.CNA	8.5

CFF – CRF



Part Number	Weight (g)
CFF.1D.694.PNMG	22.3
CRF.1D.694.PNFG	24.7

Note: All dimensions are in millimetres.

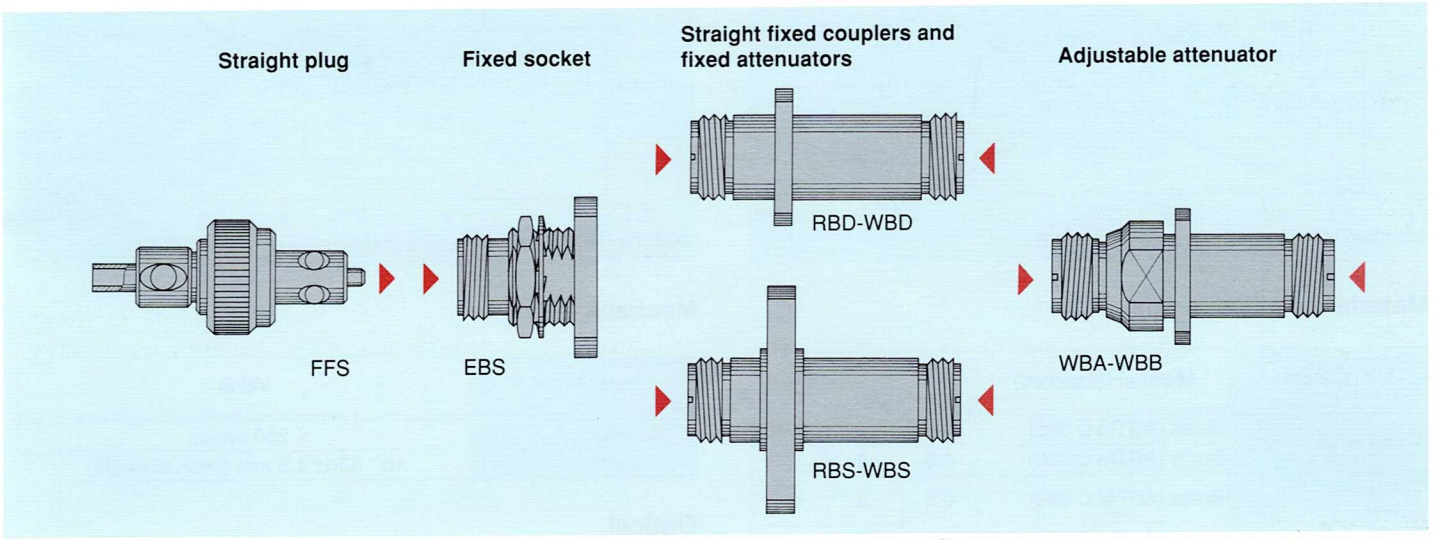
Other accessories and tooling are available for the series 1D. Please refer to the corresponding sections.
For panel cut-out and torquing of mounting nuts refer to the corresponding section.

Monomode Fibre Optic Connectors

Series EA

The range of LEMO's fibre optic connectors has been expanded with the addition of connectors designed for monomode fibres. These connectors use the Optaball ® alignment system which is compatible and intermatable with the RADIALL VFO and DF series.
The exclusive Optaball® system provides for continuous adjustment of the distance between the fibres, the fibre alignment within a guaranteed tolerance of 1µm, to compensate for light beam deflections, and an angular misalignment of less than 0.4 degree.
These new connectors can be terminated by polishing the fibre end either straight or on the slant.
These connectors were specifically designed for systems where transmission requires high performance and minimal insertion losses. Straight polishing combined with an index matching fluid reduces reflective power to minus 30 dB.
Slant polishing with a dry interface gives a very exceptional reflection rate. This is obtained as a result of fine polishing which permits a wide range of fixed and adjustable attenuators.

Interconnections



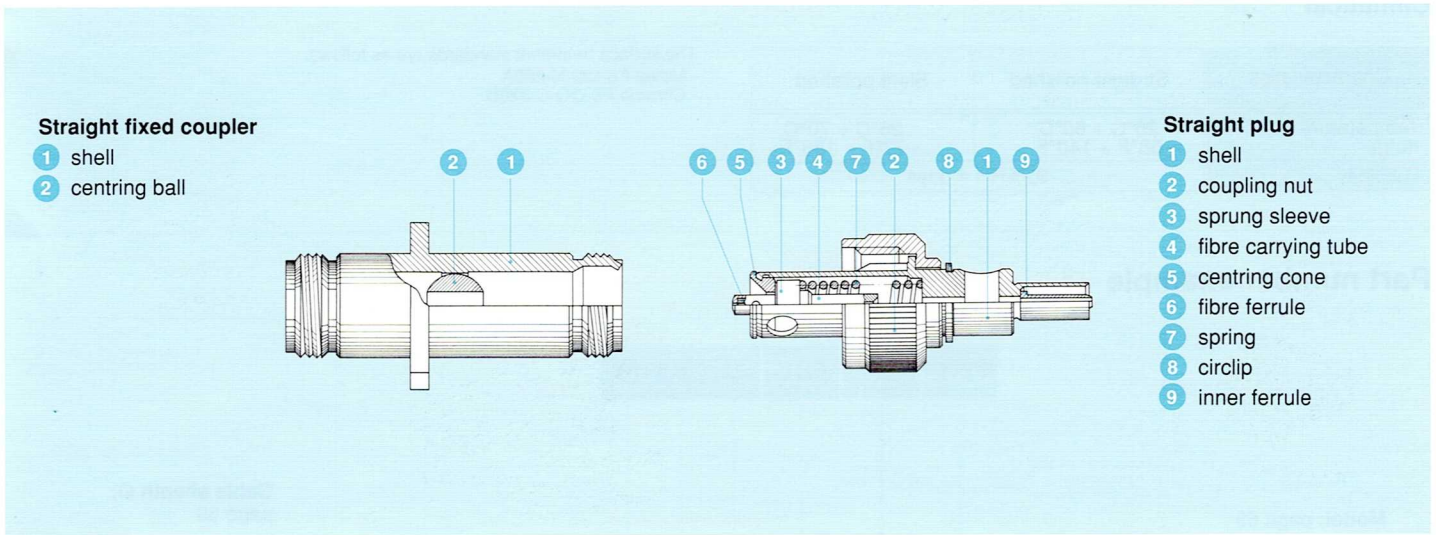
Model description

EBS Fixed socket with oval flange
FFS Straight plug for cable crimp
RBD Straight fixed coupler with square flange,
RBS Straight fixed coupler with oval flange

WBA Adjustable attenuator with square flange, from 0 to 20dB
WBB Stepped attenuator with square flange (0dB, 5dB, 10dB, 15dB)

WBD Fixed attenuator with square flange
WBS Fixed attenuator with oval flange

Part section showing internal components



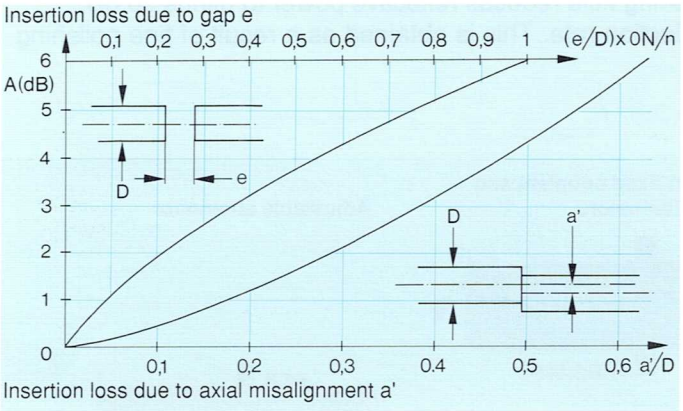
Technical characteristics

Insertion loss through a connection

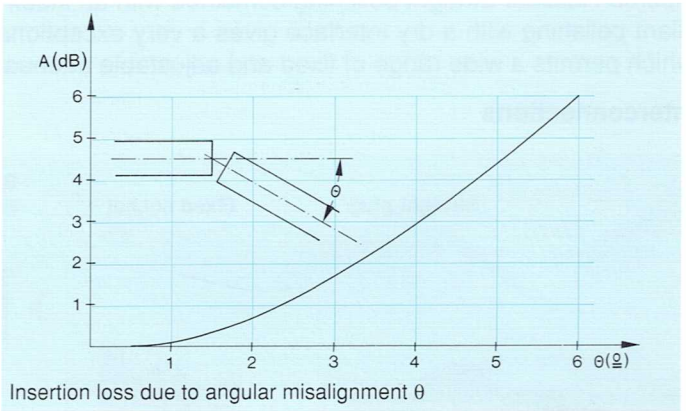
1) Insertion loss due to the gap e
The insertion loss due to the gap e between two fibres comes from Fresnel reflection (0.32 dB) as well as the numerical aperture of the fibre (ON). The loss is greatly reduced when using an index matching fluid or by a slant polishing.
Furthermore the 'Optaball®' system enables continuous adjustment of the gap e (10 µm) in order to reduce, to a minimum, the insertion loss due to the numerical aperture.

2) Insertion loss due to axial misalignment a'
The 'Optaball®' system enables adjustment of the two fibre axis to compensate the deviation of the light ray brought about by the slant polishing; it also guarantees the alignment of the two fibres (a') within a 1µm tolerance.

3) Insertion loss due to angular misalignment θ
Thanks to its concept the 'Optaball®' system maintains the misalignment θ to less than 0.4°.



Insertion loss due to axial misalignment a'



Insertion loss due to angular misalignment θ

Material and treatments

Component	Material (Standard)	Surface treat. (µm)		
		Cu	Ni	Cr
Outer shell	Brass (ASTM C 385)	0.5	3	0.3
	Brass (ASTM C 360)	0.5	3	
Latch sleeve	Brass (ASTM C 385)	0.5	3	0.3
Tube	Brass (ASTM C 385)	0.5	3	
Sleeve	CuNiZn alloy	no treatment		
Centring cone	Stainless steel (AISI 303)	passivated		
Fibre sleeve	Stainless steel (AISI 316L)	no treatment		
Ferrule	Ceramic	no treatment		
Spring	Stainless spring steel	no treatment		
Centring ball	Steel Z100 C6	no treatment		

Climatical

Characteristics	Straight polished	Slant polished
Temperature range	- 20°C + 60°C - 68°F + 140°F	- 25°C + 70°C - 77°F + 158°F
Humidity	95%RH 4 days	

Mechanical

Characteristics	Value
Endurance	> 250 cycles
Vibrations	10 - 55Hz 1.5 mm (peak to peak)

Optical

Characteristics	Straight polished	Slant polished
Insertion loss	≤ 0.7 dB	≤ 0.7 dB
Standard deviation	≤ 0.2 dB	≤ 0.2 dB
Reflected power	≤ - 30 dB 1)	≤ - 55 dB
Repeatability	± 0.1 dB	± 0.15 dB

1) with Oppanol B3 index matching fluid

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B

Part number example

FFS EA F81 C B 10

Model: page 69

Series: EA

Type: F81

Cable sheath Ø: page 69

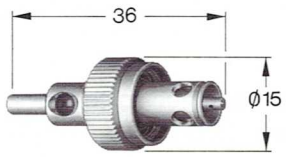
Fibre type: page 69

Housing: C = chrome plated brass

FFS.EA.F81.CB10 Straight plug for cable crimping, series EA , F81 type, chrome plated brass housing, for a 10/125/250 fibre type having a sheath OD of 1 mm.

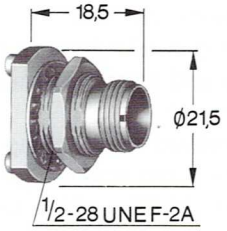
Models

FFS



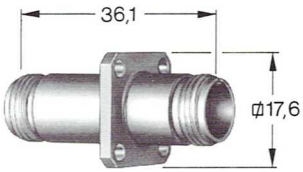
Part Number	Radiall Corresp.
FFS.EA.F81.CB08	F716001000
FFS.EA.F81.CB10	F716009000
FFS.EA.F81.CC16	F716017000
FFS.EA.F81.CB18	F716007000
FFS.EA.F81.CC30	F716002000
FFS.EA.F81.CC32	F716021000
FFS.EA.F81.CC38	F716004000
FFS.EA.F81.CC48	F716003000

EBS



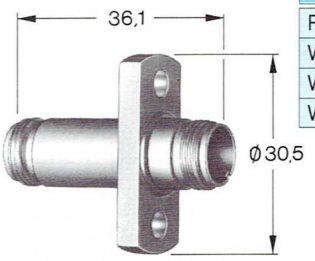
Part Number	Radiall Corresp.
EBS.EA.F81.C	F716200000

RBD-WBD



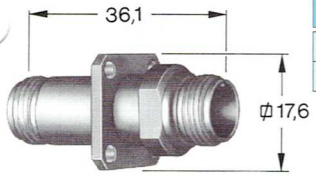
Part Number	Radiall Corresp.
RBD.EA.F81.C	F716700000
WBD.EA.F81.C05N	F716711000
WBD.EA.F81.C10M	F716712000
WBD.EA.F81.C15V	F716713000

RBS-WBS



Part Number	Radiall Corresp.
RBS.EA.F81.C	F716704000
WBS.EA.F81.C05N	F716705000
WBS.EA.F81.C10M	F716706000
WBS.EA.F81.C15V	F716707000

WBA-WBB



Part Number	Radiall Corresp.
WBA.EA.F81.C20	F716708000
WBB.EA.F81.C15	F716709000

Notes:
The FFS plug is delivered with two plastic strain reliefs of different colours: grey for straight polished connectors and yellow for slant polished connectors.

On request these models are available with pig-tails.

Note: All dimensions are in millimetres

Fibre type and diameter of the cable sheath

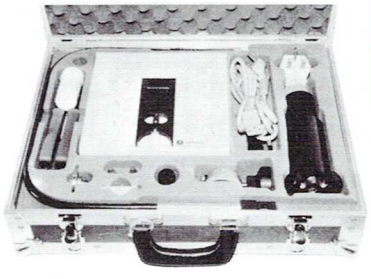
Reference		Fibre Ø (µm)	Cable Ø (mm)	
Type	Ø		int.	ext.
B	08	10/125/250	0.4	0.85
B	10	10/125/250	0.6	1.0
C	16	10/125/900	1.1	1.6
B	18	10/125/250	1.1	1.8

Reference		Fibre Ø (µm)	Cable Ø (mm)	
Type	Ø		int.	ext.
C	30	10/125/900	1)	3.0
C	32	10/125/900	1)	3.2
C	38	10/125/900	1.4	3.8
C	48	10/125/900	1.4	4.8

1) Tight buffer cable

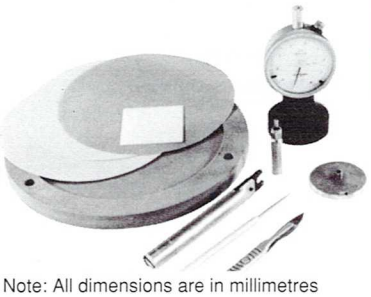
Tooling

Case with tool kit



Part Number	Radiall Corresp.
DRV.99.VF1.10	F780116000
DRV.99.VF2.20	F780117000

Tool kit for slant polishing

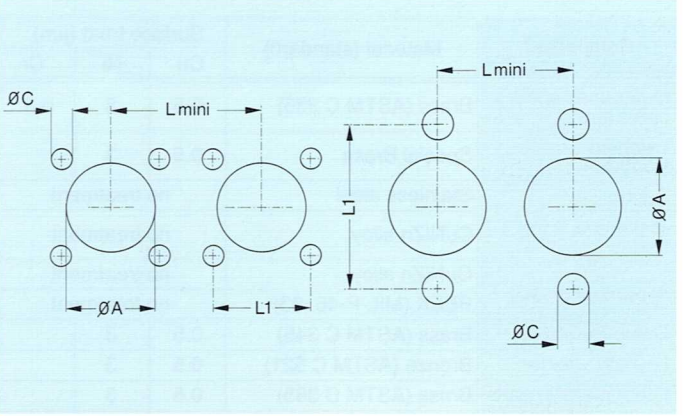


Part Number	Radiall Corresp.
DRC.99.F00.00	F780220000

Note: All dimensions are in millimetres

Cut-out

Panel cut-out



Model	Dimensions			
	A	C	L	L1
EBS	12.8	–	20.5	–
RBD-WBD WBA-WBB	11.2	2.6	18.6	12.7
RBS-WBS	12.8	4.2	15.5	21.6

Multimode Fibre Optic

Series B

The New Generation group of connectors includes fibre optics in the series B which can be used in a wide range of applications including communications and medical instruments.
This multimode fibre optic system is available for single fibres in the series 0B and for multifibre cables or mixed fibre optic/electric (high and low voltage and coaxial) contacts in the series 2B, 3B, 4B and 5B, as well as elements for electro-optic emitters and detectors.
Characterized by a termination method of polishing with epoxy, these fibre optic connectors are adapted to the most used types of multimode fibres. The fixed sockets for TO-18 shells are available fitted with emitters (LED IR Ga As or IR (GaAl) As) or photodiode detectors (Si-PIN) which permit connections up to 3 kilometers with a transmission band of 20 MHz. These connectors can also be ordered without these elements.
The guide on the outer shell eliminates alignment errors which ensures excellent mating repeatability.

Model description

Single fibre

FGG Straight plug with key (G) and cable collet
PCG Fixed socket, short model, two nuts and cable collet (back panel mounting) with key (G).
PFG Fixed socket, nut fixing, with key (G) and cable collet (back panel mounting).
PHG Free socket with key (G) and cable collet

Multifibre and Mixed

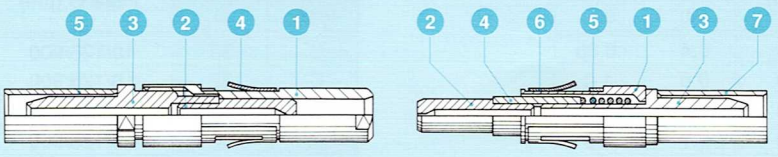
EGG Fixed socket, nut fixing, with key (G) or keys (code A...L)
FGG Straight plug with key (G) or keys (code A...M) and cable collet
PFG Fixed socket, two nuts with key (G) or keys (code A...L) and cable collet (back panel mounting)
PHG Fixed socket with key (G) or keys (code A...L) and cable collet
PKG Fixed socket, nut fixing, with key (G) or keys (code A...L) and cable collet

Electro - Optical Components

EEG Fixed socket, nut fixing (back panel mounting) with key (G).
EGG Fixed socket, nut fixing, with key (G)

Part section showing internal components of a fibre optic contact

Female contact
1. alignment tube
2. alignment ferrule
3. crimp back nut
4. clip
5. crimp ferrule



Male contact
1. outer shell
2. alignment ferrule
3. crimp back nut
4. sprung sleeve
5. spring
6. clip
7. crimp ferrule

Technical characteristics

Material and treatment

Component	Material (standard)	Surface treat (µm)		
		Cu	Ni	Cr
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3
Latching sleeve	Special Brass	0.5	3	
Spring	Stainless steel	no treatment		
Alignment ferrule	CuNiZn alloy	no treatment		
Alignment sleeve	CuNiZn alloy	no treatment		
	PEEK (MIL-P-46183)	no treatment		
Crimp ferrule	Brass (ASTM C 345)	0.5	3	
Locking washer	Bronze (ASTM C 521)	0.5	3	
Other metallic parts	Brass (ASTM C 385)	0.5	3	
Strain relief	Polyurethane			

Surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B

Mechanical and climatical

Characteristics	Value	Standard	Method
Cable retention force	>100 N	MIL-STD-1344A	2009.1
Endurance	> 500 cycles	MIL-STD-1344A	2016
Fibre diameter	125 µm min.		
Temperature range	– 20°C + 80°C (– 2°F + 176°F)		

1N = 0.102 kg

Optical

Characteristics	Value
Insertion loss[1)]	< 1.5 dB
Repeatability	better than ± 0.2 dB

1) Depends on fibre type

Part number examples

Single fibre

Model: page 72

Series: 0B

Type: page 72

Housing:
C = chrome plated brass

Alignment termination:
A = CuNiZn alloy

Variant[1)]

Ø Crimp ferrule
30 = Ø 2.5 à 3.5 mm
35 = Ø 3.5 à 4.0 mm
45 = Ø 4.0 à 4.5 mm

Cable fixing type:
E = crimp

Contact type
B = male
S = female

FGG.0B.051.CABE30R Straight plug with key (G) and cable collet, series 0B, single fibre for a silica/silica (50/125µm) fibre type, chrome plated brass housing, CuNiZn alloy alignment termination, male contact, for crimping to a cable with an OD ranging from 2.5 to 3.5 mm, red strain relief.

Note:
1) The strain reliefs are available in nine colours. The relationship between part number letter and colour is to be found in the 'Accessories' section.

Multifibre and Mixed

Model: page 72

Series: page 72

Type: page 72

Housing:
C = chrome plated brass

Type of fibre: page 73

Variant[1)]

Ø Collet: page 22

Cable fixing type:
D = cable collet

Contact type page 73

PKG.3B.97C.C4MD92 Fixed socket, nut fixing, with key (G) and cable collet, series 3B, mixed type with 2 optical fibres and 4 low voltage contacts, chrome plated brass housing,female fibre optic contacts for HCS (200/230µm) type fibre, and female crimp low voltage contacts, type D collet of 9.2 mm diameter.

Note:
1) The plugs and sockets with cable collet can be supplied with a collet nut for fitting a cable strain relief. For ordering add a 'Z' in the variant position of the part number and order the strain relief separately as explained in the 'Accessories' section.

Electro-optical components

Model: page 72

Series: 0B

Type: page 72

Housing:
C = chrome plated brass

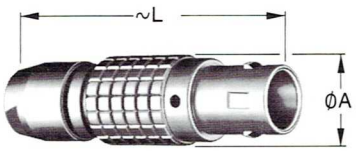
Alignment termination:
L = PEEK

Contact type:
B = male
S = female

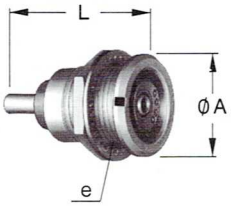
EGG.0B.061.CLS Fixed socket, nut fixing, with key (G), series 0B fitted with a IR (GaAl) As LED, chrome plated brass housing, PEEK alignment termination, female contact.

Models

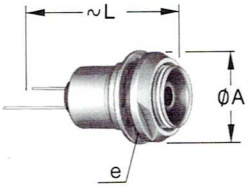
FGG



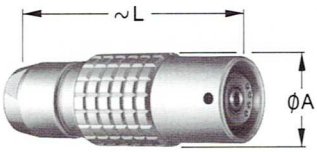
EGG



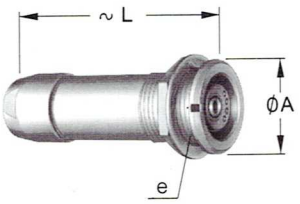
EEG



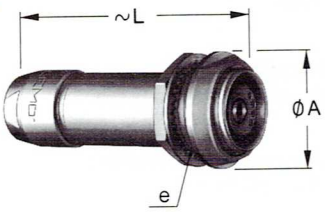
PHG



PKG



PFG



Model	Dim.	Series				
		0B[1]	2B	3B	4B	5B
FGG	A	9.5	15.0	18.0	25.0	35.0
	L	58.0	49.0	59.0	76.0	104.0
EGG	A	10.0	18.0	22.0	28.0	40.0
	e	M9x0.6	M15x1	M18x1	M25x1	M35x1
	L	27.0	25.0	30.0	34.5	45.5
EEG	A	12.0	–	–	–	–
	e	M9x0.6	–	–	–	–
	L	27.0	–	–	–	–
PHG	A	9.5	16.5	19.0	26.0	36.0
	L	57.0	47.0	56.0	73.0	99.0
PKG[2]	A	12.0	18.0	22.0	28.0	40.0
	e	M9x0.6	M15x1	M18x1	M25x1	M35x1
	L	27.0	47.0	56.0	73.0	99.0
PFG	A	12.0	20.0	24.0	30.0	–
	e	M9x0.6	M15x1	M18x1	M25x1	–
	L	57.0	47.0	56.0	73.0	–

1) The 0B connectors with cable collet are always delivered with a strain relief. The colour of which is to be specified in the 'variant' position of the part number.
2) The part number for this model in the series 0B is PCG. This model has been specially designed to have pig-tails (back panel mounting).

On request the PFG model is also available in the 5B series.

Note: All dimensions are in millimetres

Types

Single fibre

Ref.	Series	Type	Ø (µm)	
			core	cladding
051	0B	Si/Si	50.0	125
		Si/Si	62.5	125
052		Si/Si	100	140
053		PCS	200	
054		HCS	200	230
055		Si/Si	200	280

Note: On request alignment terminations for other types of fibre can be developed.

Emitting diodes and receiving photodiodes

Ref.	Series	Component
060	0B	LED IR Ga As
061		LED IR (GaAl) As
066		photodiode Si PIN
099		empty shell TO-18

Note: All dimensions are in millimetres

Multifibre and Mixed: optical fibre + LV

Reference	Series	Optical fibre No	Low voltage								
			Contact No	Cont. Ø (mm)	Contact type		Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)
					Solder	Crimp					
96A	2B	1	2	0.9	●	●	0.33	0.50	1.0	1.50	8
96C		1	4	0.7	●	○	0.40	0.60	1.2	1.80	5
96E		1	6	0.7	●	○	0.30	0.40	0.8	1.20	4
07A	3B	2	–	–			–	–	–	–	–
97C		2	4	0.9	●	●	0.40	0.60	1.2	1.80	8
97J		2	10	0.7	●	○	0.20	0.28	0.6	0.85	5
07C	4B	4	–	–			–	–	–	–	–
97L		2	12	0.9	●	●	0.40	0.60	1.2	1.80	4
97R		2	16	0.9	●	●	0.40	0.60	1.2	1.80	4
97T		2	18	0.7	●	○	0.50	0.70	1.5	2.10	2
98L		3	12	0.7	●	○	0.30	0.50	1.0	1.50	2
07J	5B	10	–	–			–	–	–	–	–

● Available: male and female contacts
○ On request: male and female contacts

Type of fibre - Contacts

Type of fibre

Ref.	type	Ø (µm)	
		core	cladding
1	Si/Si	50.0	125
	Si/Si	62.5	125
2	Si/Si	100	140
3	PCS	200	
4	HCS	200	230
5	Si/Si	200	280

Note: On request alignment terminations for other types of fibre can be developed

Contact type

In the case of mono and multifibre connectors, the reference letter in the part number indicates the optical fibre contact. This letter refers to the low voltage contact in the case of mixed type connectors.

Mono & multifibre connectors

Ref.	Contact type
B	male for plugs
S	female for sockets

Mixed connectors

Ref.	Contact type
A	male solder
C	male crimp
L	female solder
M	female crimp

Tooling

Polishing base for OB optical fibre contacts

Part Number
DCS.91.236.0LC[1)]
DCS.91.156.0LC[2)]

1) for FGG, PHG et PFG
2) for PCG

Polishing base for 2B-5B optical fibre contacts

Part Number
DCS.91.124.0LC

Crimping tool with dies for OB optical fibre contacts

Part Number
DPA.99.445.2K

Crimping tool with dies for 2B-5B optical fibre contacts

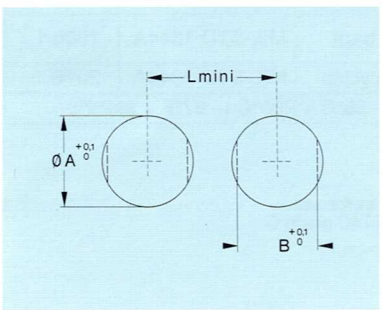
Part Number
DPA.99.003.8K

Other tooling as well as accessories are available for fibre optic connectors. Please refer to the corresponding sections.

Note: All dimensions are in millimetres

Cut-out and mounting nut torque

Panel cut-out



Series	Dimensions			Torque (Nm)
	A	B	L	
0B	9.1	8.3	13.5	5
2B	15.1	13.6	21.5	9
3B	18.2	16.7	27.0	18
4B	25.2	23.6	34.0	25
5B	35.2	33.6	44.0	35

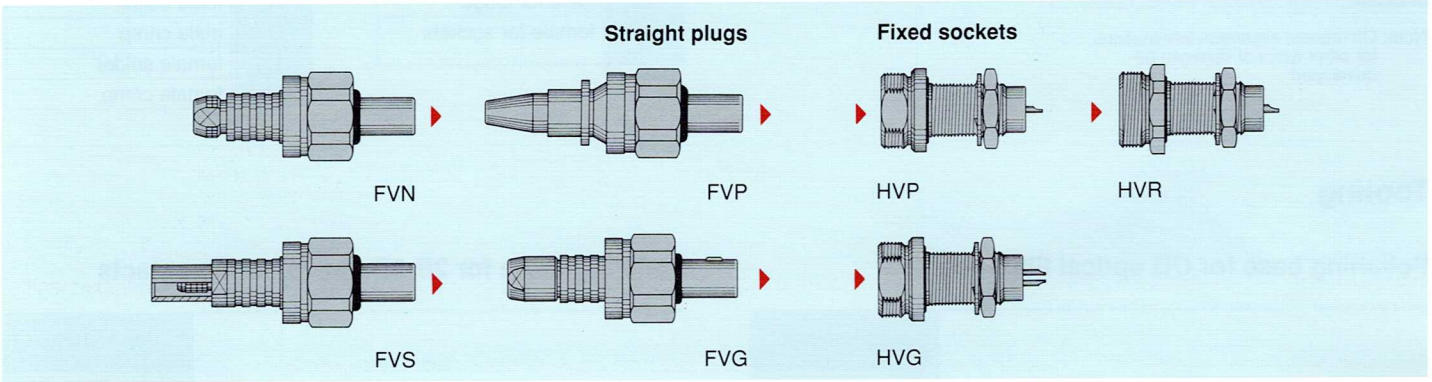
1N = 0.102 Kg

Note: All dimensions are in millimetres

Series 03

This new series of connectors stems from the series 00 and has been specifically developed for applications where the connection must be guaranteed under very high pressure.
The push-pull LEMO self-latching system is replaced by a screw thread connector coupling system which provides very high security, particularly against vibration. The watertight coupling is achieved by the compression of an O-ring made of Viton. After cable assembly the rear of the plug is covered by a heat-shrink tube.
This series is available as 50 Ω coaxial or multipole with 2 or 3 contacts.

Interconnections



Model description

Coaxial

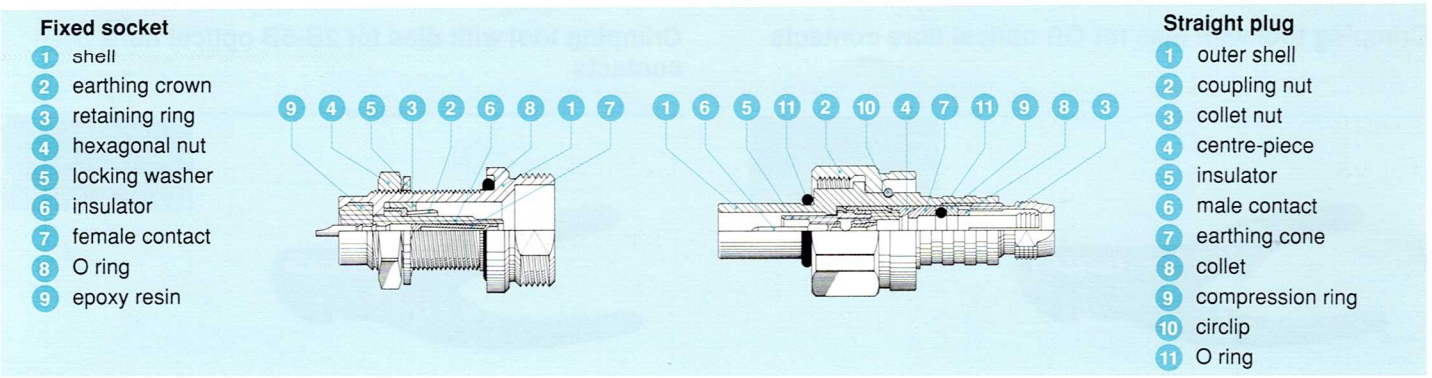
FVN Straight plug with cable collet
FVP Straight plug with brazing ferrule
FVS Straight plug with crimp ferrule

HVP Fixed socket, vacuumtight, with round flange
HVR Fixed socket, vacuumtight, with hexagonal flange

Multicontacts

FVG Straight plug with key (G) and cable collet
HVG Fixed socket, vacuumtight, with key (G) and round flange

Part section showing internal components



Technical characteristics

Material and treatment

Component	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell, nut, Collet nut	Brass (ASTM C 385)	0.5	3	0.3	
	Stainless st. (AISI 316L)				
Earthing crown	Cu-Be (FS-QQ-C-530)	0.5	3		1.5
Crimp ferrule	Brass (ASTM C 385)	0.5	3		
Locking washer	Bronze (ASTM C 521)	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PEEK (MIL-P-46183)				
O ring	FPM (Viton)				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0

Mechanical and climatical

Characteristics	Value	Standard	Method
Cable pull off Force [1]	> 100 N	MIL-STD-1344A	2007.1
Protection index	> IP68	IEC 529	
Acceptable hydrostatic pressure	ap. 60 bars	MIL-STD-1344A	1006.1
Endurance	> 1000 cycles	MIL-STD-1344A	2016
Operating temperature	– 55°C + 200°C (– 67°F + 392°F)		

1) Average value
1 N = 0.102 kg

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A or MIL-C-26074C grade C
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1

Part number example

FVN	03	250	C	L	A	C	27

Model: page 74

Series: 03

Type: see below

Housing:
C = chrome plated brass
S = stainless steel

Insulator:
L = PEEK

Contact type:
A = male solder
C = male crimp
L = female solder

Cable fixing type:
C = cable collet
E = crimp
V = braze

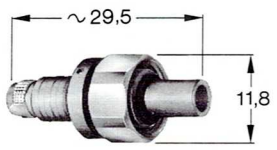
Ø Collet[1]**:** see below

FVN.03.250.CLAC27 Straight plug with cable collet, series 03, 50Ω coaxial type, chrome plated brass housing, PEEK insulator, male solder contact, type C collet for a 2.7mm max. OD cable.

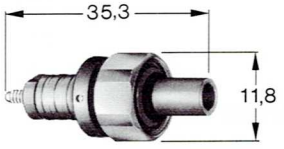
Note:
1) For fixed socket model HV● a 'V' indicates that the model has been subjected to and passed the MIL-STD-1344A method 1008 vacuum test.

Dimensions

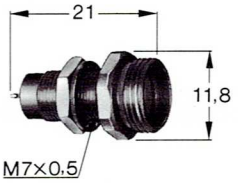
FVN



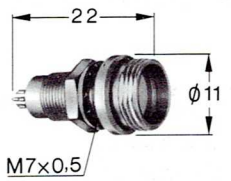
FVS



HVR



HVG

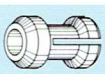


Note: All dimensions are in millimetres

Types

Reference	Series	Impedance (Ω)	Contact No	Contact Ø (mm)	Ue (kV rms)	Ue (kV dc)	Us (kV rms)	Us (kV dc)	Rated Current (A)
250	03	50	1	0.7	2.1	3	0.7	1	4
302		–	2	0.5	1.0	1.5	0.4	0.5	5
303		–	3	0.5	1.0	1.5	0.4	0.5	3

Collets



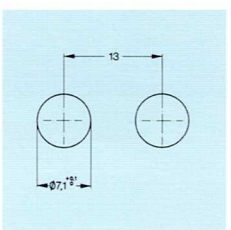
Reference		Series	Cable OD	
Type	Ø		max.	min.
C	27	03	2.6	2.2
C	31		3.0	2.8
E	24		Group 1	
E	31		Group 2	
V	16		1.6	–
V	20		2.0	–

Other collet diameters are available on request
Group 1 includes RG.178 B/U and RG.196 A/U cables
Group 2 includes RG.174 A/U, RG.188 A/U, RG.316 /U and Dätwyler HF 2114.1 cables

Note: All dimensions are in millimetres

Cut-out

Panel cut-out

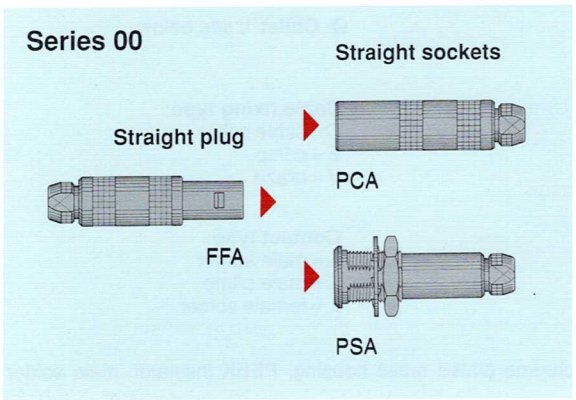


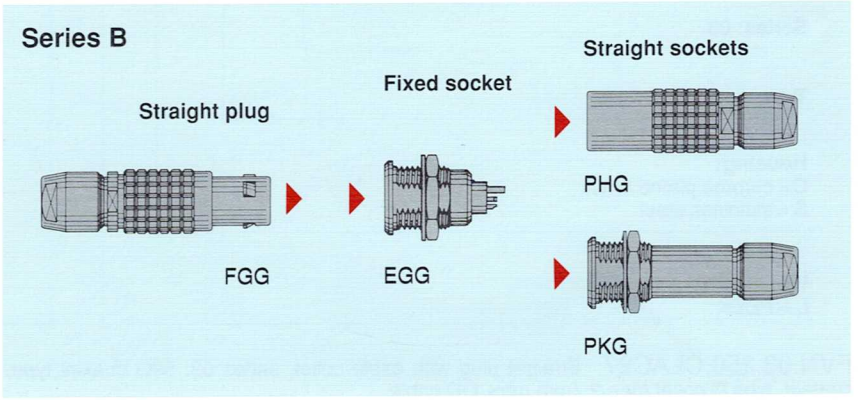
Fluidic Connectors

Series 00-B

LEMO fluidic connectors find many applications, for example in medical and dentistry equipment among many others. These connectors may be of the monotube type available in the series 00 and 0B or of the multitube type and/or mixed with electrical contacts available in the series 2B and 3B. On request other types not mentioned in this catalogue can be developed.

Interconnections





Model description

Monofluidic (Series 00)

FFA Straight plug with cable collet
PCA Free socket with cable collet
PSA Fixed socket, nut fixing, with cable collet

Monofluidic (Series 0B)

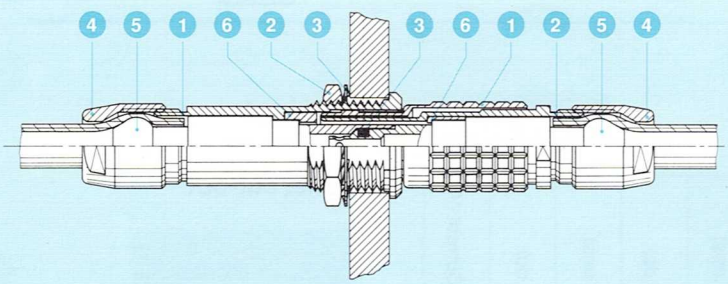
FGG Straight plug with key (G) or keys (code A...M) and cable collet
PHG Free socket with key (G) or keys (code A...M) and cable collet
PKG Fixed socket, nut fixing, with key (G) or keys (code A...M) and cable collet

Multifluidic and mixed (Series 2B – 3B)

EGG Fixed socket, nut fixing, with key (G) or keys (code A...M)
FGG Straight plug with key (G) or keys (code A...M) and cable collet
PHG Free socket with key (G) or keys (code A...M) and cable collet
PKG Fixed socket, nut fixing, with key (G) or keys (code A...M) and cable collet

Part section showing internal components (Monofluidic - Series 0B)

Fixed socket
1. shell
2. hexagonal nut
3. locking washer
4. collet nut
5. tube support
6. retaining ring



Straight plug
1. outer shell
2. latch sleeve
3. o-ring
4. collet nut
5. tube support
6. retaining ring

Technical characteristics

Material and treatments

Component	Material (Standard)	Surface treatment (µm)			
		Cu	Ni	Cr	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	
	Aluminium (AISI 6262)	anodized			
Latching sleeve	Special brass	0.5	3		
Tube support	Brass (ASTM C 385)	0.5	3		
Retaining ring	Brass (ASTM C 385)	0.5	3		
Locking washer	Bronze (ASTM C 521)	0.5	3		
Insulator	PEEK (MIL-P-46183)				
	PBTP (MIL-M-24519)				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0
O-ring	Silicone rubber				

Mechanical and climatical

Characteristics	Unit	Series			
		00	0B	2B	3B
Max. working pressure	bar	2	2	0.5	0.5
Endurance	cycles	> 1000			
Operating temperature	°C	– 15 + 30 (+ 5°F + 86°F)			

Recommended tube material

- Soft Tecalan® TTF type, polyamide 11
- Soft Tecalan® STS type, polyamide 12 or polyethelene LD

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B

Part number example

FGG	0B	010	C	Z	Z	N	50	

Model: see below

Series: 00 / 0B-2B-3B

Type: page 78

Housing:
C = chrome plated brass
L = anodized aluminium[3)]

Insulator:
L = PEEK
N = PBTP
Z = without insulator[1)]

Variant[3)]

Ø Tube or collet:
page 78

Fixing type: page 78
D = cable collet
N = tube support

Contact type:
A = male solder
C = male crimp
L = female solder
M = female crimp
Z = without contact[2)]

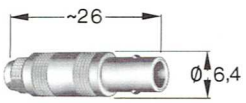
FGG.0B.010.CZZN50 Straight plug with key (G), 0B series, monofluidic type fitted with one fluidic tube, chrome plated brass outer housing, nickel plated brass tube support for a 5.0 mm OD tube.

Note:
1) For monofluidic (010) types only
2) For monofluidic (010) and multifluidic (040) types only.
3) The 'variant' position of the part number is used to indicate the anodizing colour of aluminium shells. The colours available and their corresponding reference letters are to be found on the inside front cover of this catalogue.

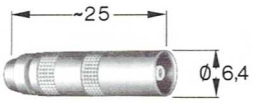
Models

Series 00

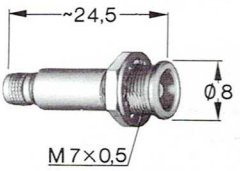
FFA



PCA

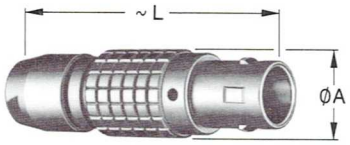


PSA

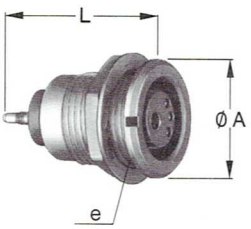


Series B

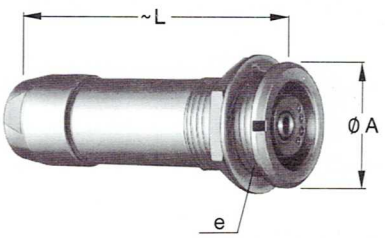
FGG



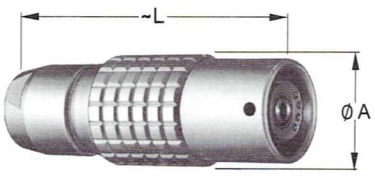
EGG



PKG



PHG



Model	Dim.	Series		
		0B	2B	3B
FGG	A	9.5	15.0	18.0
	L	36.0	49.0	59.0
EGG	A	–	18.0	22.0
	e	–	M15x1	M18x1
	L	–	31.5	34.5
PHG	A	9.5	–	19.0
	L	35.0	–	56.0
PKG	A	10.0	–	22.0
	e	M9x0.6	–	M18x1
	L	35.5	–	56.0

Note: All dimensions are in millimetres

Types

Fluidics and Mixed: Fluidics + LV

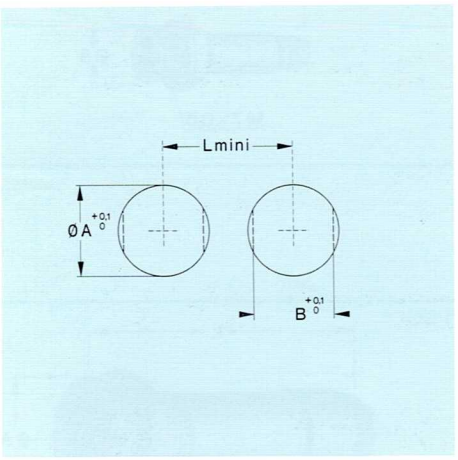
Reference	Series	Fluidics						Low voltage						Fixing Type	Tube or collet Ø 2)	Collet Part Number
		Tube No	Ext. Ø of tube	Int. Ø of tube	Int. Ø of cont	Max. working pressure (bar)	Contact No	Contact Ø	Us (kV rms)	Us (kV dc)	Ue (kV rms)	Ue (kV dc)	Rated Cur. (A)			
010	00	1	2.2	1.4	0.9	2.0	–	–	–	–	–	–	–	N	22	FFA.00.727.CN
010	00	1	3.2	1.9	0.9	2.0	–	–	–	–	–	–	–	N	32	FFA.00.731.CN
010	0B	1	5.0	4.0	1.6	2.0	–	–	–	–	–	–	–	N	50	–
012	2B	1	2.6	2.2	1.3	0.5	4	0.9	0.33	0.50	1.0	1.50	8	D	1)	–
013	2B	1	3.6	3.2	1.6	0.5	6	0.7	0.40	0.60	1.2	1.80	5	D	1)	–
040	3B	4	2.0	1.6	0.7	0.5	–	–	–	–	–	–	–	D	1)	–
025	3B	2	2.6	2.2	1.3	0.5	10	0.7	0.20	0.28	0.6	0.85	5	D	1)	–

1) Refer to the table of series B collets on page 22 for the diameters of the collets
2) For monofluidic connector types, this diameter indicates the outside diameter of the fluidic tube being fitted.

Note: All dimensions are in millimetres

Cut-out and mounting nut torque

Panel cut-out



Series	Dimensions			Torque (Nm)
	A	B	L	
00	7.1	6.4	11.5	2
0B	9.1	8.3	13.6	5
2B	15.1	13.6	21.5	12
3B	18.2	16.7	27.0	18

1N = 0.102 Kg

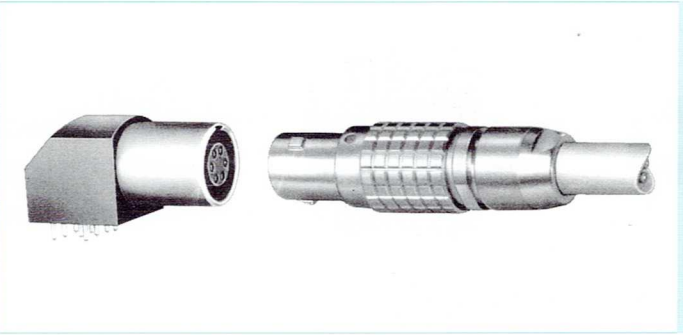
Note: All dimensions are in millimetres

Other accessories and tooling are available for the fluidic 00 and B series connectors. Refer to the corresponding sections.

Elbow sockets for printed circuits

Series S-B

This multipole type of socket is available in Series OS, 1S, OB and 1B. Fitting onto printed circuit is either by soldering the four studs or by four screws (M1.6).



Model description

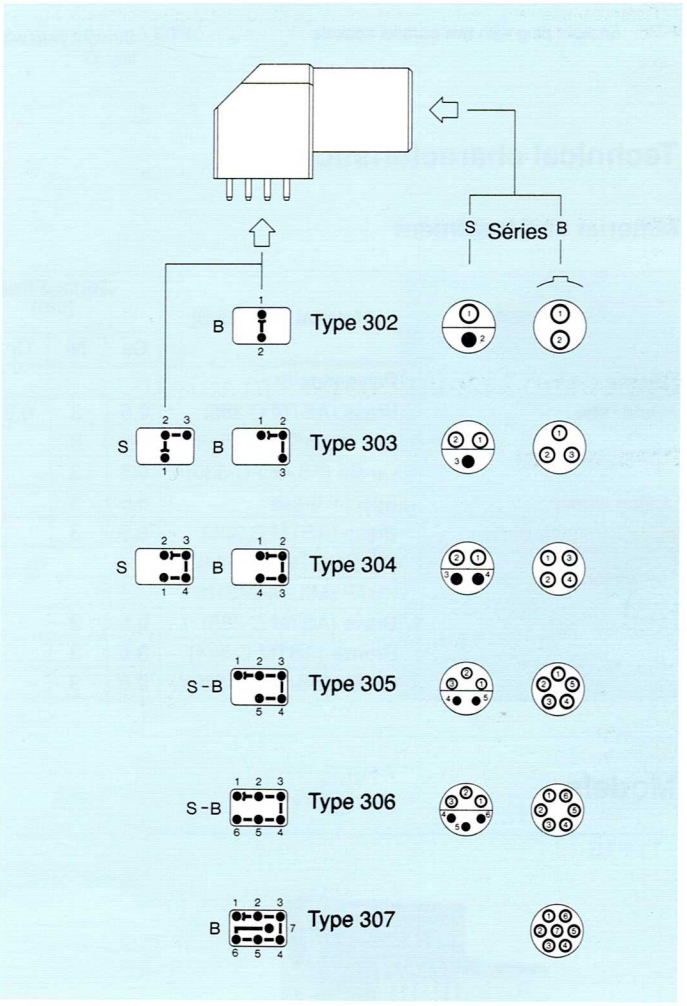
EPL Elbow socket (90°) for printed circuit
EPG Elbow socket (90°) with key (G) for printed circuit

Technical characteristics

Material and treatment

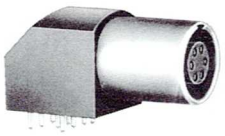
Component	Material (Standard)	Surface treat. (µm)		
		Cu	Ni	Au
Plastic shell	PPS (ASTM D 4067)			
Metallic parts	Brass (ASTM C 385)	0.5	3	
	Mazak	10	15	
Insulator	PEEK (MIL-P-46183)			
Male contact	Brass (ASTM C 385)	0.5	3	1.5
Female contact	Bronze (ASTM C 544)	0.5	3	2.0

The surface treatment standards arec as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1



Models

EPG-EPL

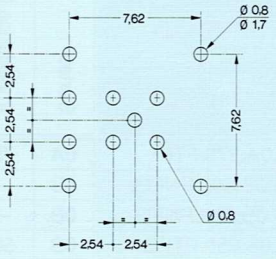


Part Number	Series	Contact No	Us (kV rms)	Rated Current (A)
EPL.0S.302.HLN	0S	2	0.40	4.5
EPL.0S.303.HLN	0S	3	0.40	4.5
EPL.0S.304.HLN	0S	4	0.40	4.5
EPL.1S.302.HLN	1S	2	0.40	4.5
EPL.1S.303.HLN	1S	3	0.40	4.5
EPL.1S.304.HLN	1S	4	0.40	4.5
EPL.1S.305.HLN	1S	5	0.23	4.5
EPL.1S.306.HLN	1S	6	0.23	4.5

Part Number	Series	Contact No	Us (kV rms)	Rated Current (A)
EPG.0B.302.HLN	0B	2	0.40	4.5
EPG.0B.303.HLN	0B	3	0.40	4.5
EPG.0B.304.HLN	0B	4	0.40	4.5
EPG.1B.302.HLN	1B	2	0.40	4.5
EPG.1B.303.HLN	1B	3	0.40	4.5
EPG.1B.304.HLN	1B	4	0.40	4.5
EPG.1B.305.HLN	1B	5	0.23	4.5
EPG.1B.306.HLN	1B	6	0.23	4.5
EPG.1B.307.HLN	1B	7	0.23	4.5

Cut-out

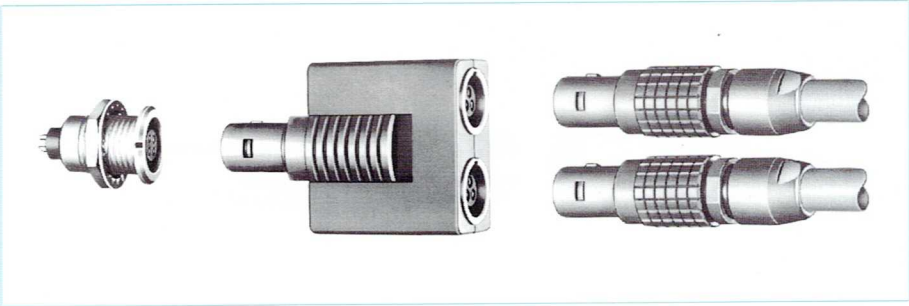
PCB Drilling pattern



Plugs with parallel sockets

Series S-B-0A

These plugs have been designed to divide one or more signals originating from the same source to two different points. They are used in numerous application fields, particularly in audio and video signal transmission.



Model description

FTY Straight plug with two parallel sockets

FTG Straight plug with two parallel sockets, with key 'G'

Technical characteristics

Material and treatment

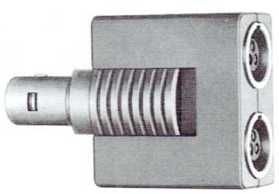
Component	Material (Standard)	Surface treat. (µm)			
		Cu	Ni	Cr	Au
Plastic shell	Polyamide 6				
Outer shell	Brass (ASTM C 385)	0.5	3	0.3	
Earthing crown	Bronze (ASTM C 544)	0.5	3		
	Cu-Be (FS-QQ-C-530)[1]	0.5	3		1.5
Latch sleeve	Special brass	0.5	3		
Other metallic parts	Brass (ASTM C 385)	0.5	3		
Insulator	PTFE (ASTM D 1457-83)[2]				
	PBTP (MIL-M-24519)				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0
	Cu-Be (FS-QQ-C-530)[1]	0.5	3		2.0

1) Used in coaxial types of series OA
2) Used in triaxial types of series OS and in coaxial types of series OA

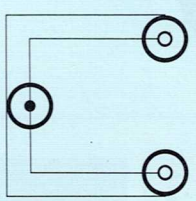
The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1

Models

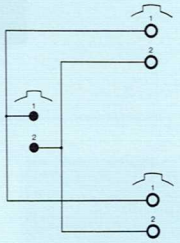
FTY-FTG



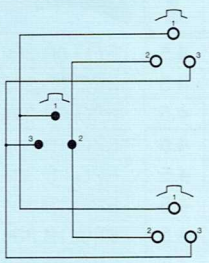
Coaxial type (275)



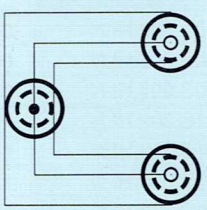
Multipole type (302)



Multipole type(303)



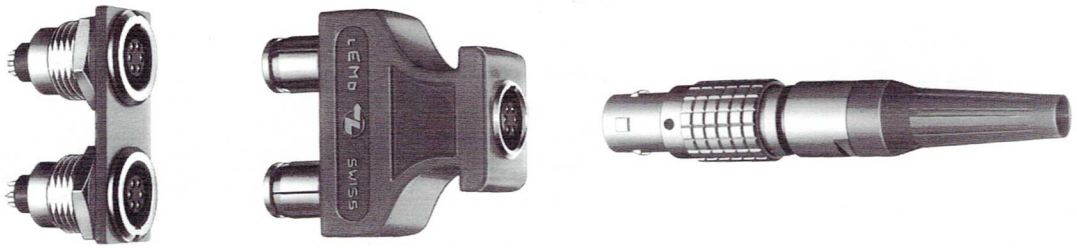
Triaxial type (650)



Part Number	Series	Impedance (Ω)	Contact No	Us (kV rms)	Rated Cur. (A)
FTY.0A.275.FTF	0A	75	1+1	0.70	2
FTG.0B.302.PNFG	0B	–	2	0.46	4
FTG.0B.303.PNFG	0B	–	3	0.42	4
FTY.0S.650.PTFG	0S	50	2+1	0.25	4

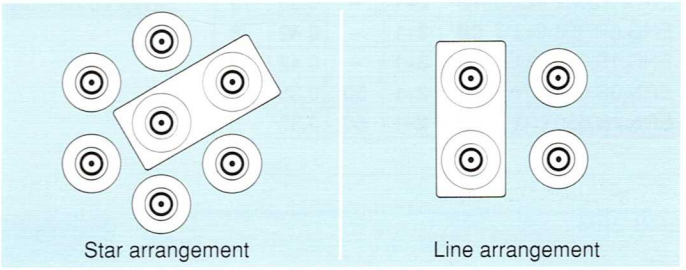
Note: All dimensions are in millimetres

Audio-Video applications



The LEMO Audio-video connector system consists of two sockets, with or without microswitch, a bridge plug with or without monitoring output and a plug with or without strain relief. This system is already widely used in telecommunication equipment and in radio and television broadcasting centres (registered patent Nr 1711911).
These audio-video connectors are fully intermatable with all other connector models of the same series and type. In order to provide a coding system, the bridge plug housing, double plastic panel washer and the strain relief are available in nine colours.

Radial switching:
Bridge plugs of coaxial and triaxial types allow a star-shaped connecting arrangement of sockets. This solution is particularly interesting when switching of a single signal onto different outputs is needed.



Audio mono applications:
We offer the series OS and 1S connectors with 50Ω triaxial contacts (650) or multipole connectors with two contacts in the series OB (302) or three contacts in the series OB and 1B (303).

Audio stereo applications:
We offer the series 1B multipole connector with six contacts (306) and the series 1D quadrax connector.

Video applications:
For video and synchronization signals routing we offer a 75Ω coaxial connecting system in series 0A and 1S (275).

Model description

Audio mono

ENG Fixed socket with tag, nut fixing, with key (G)
ERN Fixed socket with tag, nut fixing
ERM Fixed socket with microswitch, nut fixing
CFF Bridge plug with two non-latching plugs
CRF Bridge plug with two non-latching plugs and monitoring socket
CRG Bridge plug with two non-latching plugs and monitoring socket, with key (G)

Audio stereo

EMG Fixed socket with microswitch, nut fixing
ENG Fixed socket with tag, nut fixing, with key (G)
ERN Fixed socket with tag, nut fixing
CFF Bridge plug with two non-latching plugs
CRF Bridge plug with two non-latching plugs and monitoring socket
CRG Bridge plug with two non-latching plugs and monitoring socket with key (G)

Video

ABE Adapter consisting of a LEMO socket and a BNC socket, with microswitch
ERM Fixed socket with microswitch, nut fixing
CFF Bridge plug with two non-latching plugs
CRD Bridge plug with two non-latching plugs and measuring socket
CRF Bridge plug with two non-latching plugs and monitoring socket

General technical characteristics

Material and treatment

Component	Material (Standard)	Surface treat. (µm)			
		Cu	Ni	Cr	Au
Outer shell and collet nut	Brass (ASTM C 385)	0.5	3	0.3	
Plastic shell	Polyamide 6				
Earthing crown	Cu-Be (FS-QQ-C-530)[1]	0.5	3		1.5
	BZ4 (ASTM C 544)	0.5	3		1.5
Locking washer	Bronze (ASTM C 521)	0.5	3		
Hexagonal nut	Brass (ASTM C 385)	0.5	3	0.3	
Other metallic parts	Brass (ASTM C 385)	0.5	3	0.3	
Insulator	PTFE (ASTM D 1457-83)[2]				
	PEEK (MIL-P-46183)				
	PBTP (MIL-M-24519)				
Intermediate insulator	PTFE (ASTM D 1457-83)[2]				
Male contact	Brass (ASTM C 385)	0.5	3		1.5
	Brass (ASTM C 345)[3]	0.5	3		1.5
Female contact	Bronze (ASTM C 544)	0.5	3		2.0
	Cu-Be (FS-QQ-C-530)[1]	0.5	3		2.0
Male intermediate cont.	Brass (ASTM C 385)	0.5	3		1.5
Female intermed.contact	Bronze (ASTM C 544)	0.5	3		1.5

Electrical

Characteristics	Value	Standard	Method
Contact resistance	< 6mΩ	MIL-STD-202	307
Insulation resistance	>10^{12}Ω	MIL-STD-1344A	3003.1

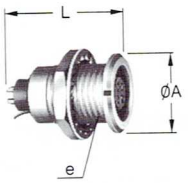
Mechanical and climatical

Characteristics	Value	Standard	Method
Contact retention force	>18N	MIL-STD-1344A	2007.1
Endurance	>1000 cycles	MIL-STD-1344A	2016
Operating temperature	max. 90°C (194°F)		

1) Used in series 0A
2) Used in coaxial and triaxial types
3) Used for series B crimp multipole plugs

The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A
- Chrome FS-QQ-C-320B
- Gold MIL-G-45204C type I, class 1

ENG-ERN



ENG: Fixed socket with tag, nut fixing, with key(G)
ERN: Fixed socket with tag, nut fixing

Dimensions

Model	Dim.	Series					
		0A	0B	0S	1B	1D	1S
ENG ERN	A	12.5	10.0	10.0	14.0	14.0	14
	e	M9x0.6	M9x0.6	M9x0.6	M12x1	M12x1	M12x1
	L	19.0	19.5	24.6	21.7	21.7	32

For audio mono applications

Part Number	Series	Contact No	Impedance (Ω)	Us (kV rms)	Rated Current (A)
ENG.0B.302.CLL	0B	2+1	–	0.66	10
ENG.1B.302.CLL	1B	2+1	–	0.53	15
ENG.0B.303.CLL	0B	3+1	–	0.42	8
ENG.1B.303.CLL	1B	3+1	–	0.42	12
ERN.0S.650.CTA	0S	2+1	50	0.35	6
ERN.1S.650.CTL	1S	2+1	50	0.35	6

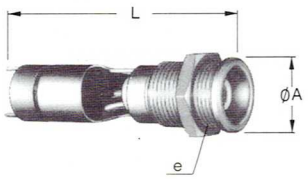
For audio stereo applications

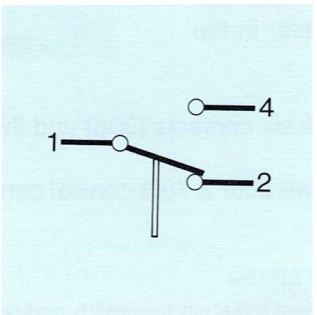
Part Number	Series	Contact No	Us (kV rms)	Rated Current (A)
ENG.1B.306.CLL	1B	6+1	0.35	7
ERN.1D.694.CNL	1D	4+1	0.14	0.5

For video applications

Part Number	Series	Contact No	Impedance (Ω)	Us (kV rms)	Rated Current (A)
ERN.0A.275.CTL	0A	1+1	75	0.70	2
ERN.1S.275.CTL	1S	1+1	75	0.80	10

EMG-ERM





EMG: Fixed socket nut fixing with key (G) and microswitch
ERM: Fixed socket and microswitch, nut fixing

Dimensions

Model	Dim.	Series		
		0S	1B	1S
EMG ERM	A	10	14	14
	e	M9x0.6	M12x1	M12x1
	L	35	38	38

For audio mono applications

Part Number	Series	Contact No	Impedance (Ω)	Us (kV rms)	Rated Current (A)
ERM.0S.650.CTA	0S	2+1	50	0.40	6
ERM.1S.650.CTL	1S	2+1	50	0.40	6

For audio stereo applications

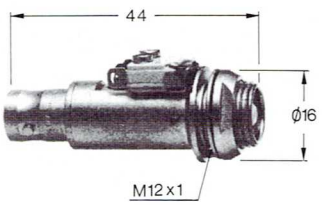
Part Number	Series	Contact No	Us (kV rms)	Rated Current (A)
EMG.1B.306.CLL	1B	6+1	0.27	3

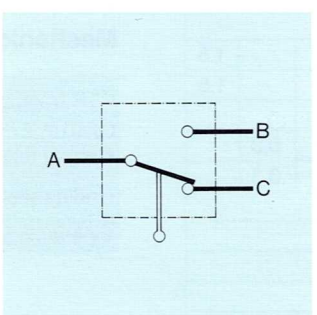
For video applications

Part Number	Series	Contact No	Impedance (Ω)	Us (kV rms)	Rated Current (A)
ERM.1S.275.CTL	1S	1+1	75	0.40	6

Dimensions

ABE





ABE: Adapter consisting of a LEMO socket, BNC socket type UG89/U and a microswitch.

Part Number	Series	Impedance (Ω)	Us (kV rms)	Rated Current (A)
ABE.1S.275.NTMZ	1S	75	0.40	6

Note: All dimensions are in millimetres

For panel cut-out and torquing of mounting nuts, refer to the corresponding section.

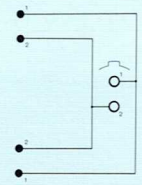
CFF: Bridge plug with two non-latching plugs
CRF: Bridge plug with two non-latching plugs and monitoring socket
CRG: Bridge plug with two non-latching plugs and monitoring socket with key (G)
CRD: Bridge plug with two non-latching plugs and resistor in series with jack plug socket.

Dimensions

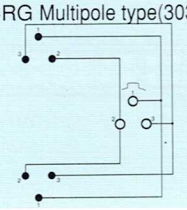
Model	Dim.	Series					
		0A	0B	0S	1B	1D	1S
CFF	A	13.5	13.5	13.5	15.0	15.0	15.0
	L	37.2	37.2	37.2	42.0	42.0	42.0
CRF-CRG CRD	L	37.2	37.2	37.2	42.5	42.5	42.5

For audio mono applications

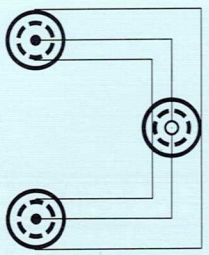
CFF-CRG Multipole type (302)



CFF-CRG Multipole type(303)



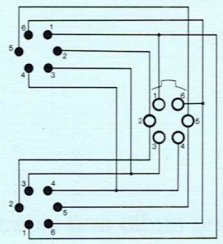
CFF-CRF Triaxial type (650)



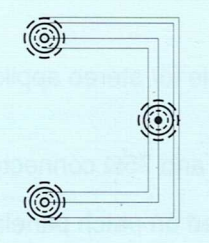
Part Number	Series	Contact No	Impedance (Ω)	VSWR f(GHz)	Us (kV rms)	Rated Current (A)
CFF. 0B.302.PNCG	0B	2+1	–	–	0.35	4
CRG.0B.302.PNEG	0B	2+1	–	–	0.35	4
CFF. 0B.303.PNCG	0B	3+1	–	–	0.27	4
CRG.0B.303.PNEG	0B	3+1	–	–	0.27	4
CFF. 1B.303.PNCG	1B	3+1	–	–	0.42	5
CRG.1B.303.PNEG	1B	3+1	–	–	0.42	5
CFF. 0S.650.PTMG	0S	2+1	50	1.08+0.54f	0.40	6
CRF. 0S.650.PTFG	0S	2+1	50	1.10+0.69f	0.40	6
CFF. 1S.650.PTCG	1S	2+1	50	1.08+0.13f	0.40	6
CRF. 1S.650.PTEG	1S	2+1	50	1.04+0.53f	0.40	6

For audio stereo applications

CFF-CRG Multipole type(306)



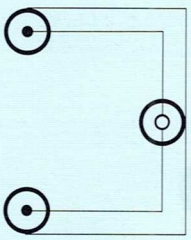
CFF-CRF Quadrax type (694)



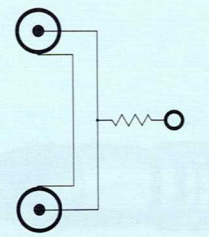
Part Number	Series	Contact No	Us (kV rms)	Rated Current (A)
CFF. 0B.306.PNCG	0B	6+1	0.14	0.5
CRG.0B.306.PNEG	0B	6+1	0.14	0.5
CFF. 1B.306.PNCG	1B	6+1	0.27	3.0
CRG.1B.306.PNEG	1B	6+1	0.27	3.0
CFF. 1D.694.PNMG	1D	4+1	0.14	0.5
CRF. 1D.694.PNFG	1D	4+1	0.14	0.5

For video applications

CFF-CRF Coaxial type (275)



CRD Coaxial type (275)



Part Number	Series	Impedance (Ω)	VSWR f(GHz)	Us (kV rms)	Rated Current (A)
CFF. 0A.275.PTCG	0A	75	1.02+0.1f	0.70	2
CRF. 0A.275.PTEG	0A	75	1.02+0.1f	0.70	2
CFF. 1S.275.PTCG	1S	75	1.05+0.3f	0.60	6
CRF. 1S.275.PTEG	1S	75	1.10+0.69f	0.40	6
CRD.1S.275.PTEG50	1S	75	1.10+0.6f	0.40	6
CRD.1S.275.PTEG5K	1S	75	1.05+0.3f	0.40	6

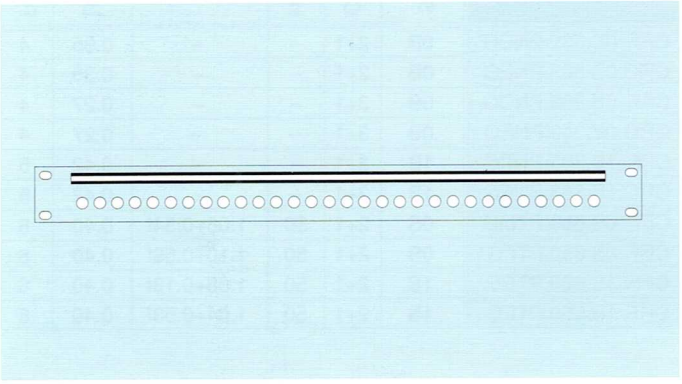
Notes:
By replacing the last letter 'G' in the above part numbers with the appropriate letters all the above bridge plugs can be supplied in the colours shown in the plastic colour table on the fold back cover.

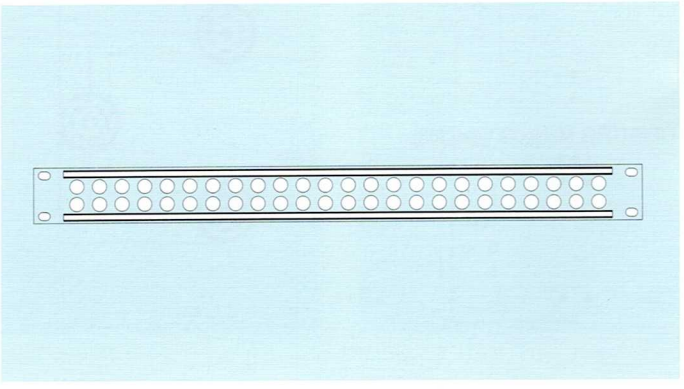
All dimensions are in millimetres

Patch Panels

Audio and video patch panels have been designed to meet the needs of the broadcasting and television industry. They allow high density routing of audio and video signals. Our standard programme includes 19" rack panels 44 mm (IU) and 88 mm (2U) high. Panels of different heights can also be delivered on request.
1U patch panels can be fitted with one or two rows of 10, 15 or 24 sockets, 2U with 20 or 26 sockets according to connector series and type used.
The panel is made of 2 mm thick sheet steel or 4 mm thick aluminium sheet.

Standard panel colour is light grey (Ral 7042); other colours such as black or beige are also available on request.
Each panel is fitted with on or more stainless steel or aluminium label holders with labels and plastic covers.
The advent of component video systems has given birth to new signal switching and routing techniques. Under development at LEMO are patch panels equipped with connectors arranged in polarized groups of 3 or 4 to allow the switching of Y, Cr, Cb or R, G, B and Sync. signals. Except for the bridging plugs, all patch panel connectors are of LEMO push-pull type with the worldwide well-known self-latching system. Depending on application, they are available in different sizes as coax, triax, quadrax or multipole.



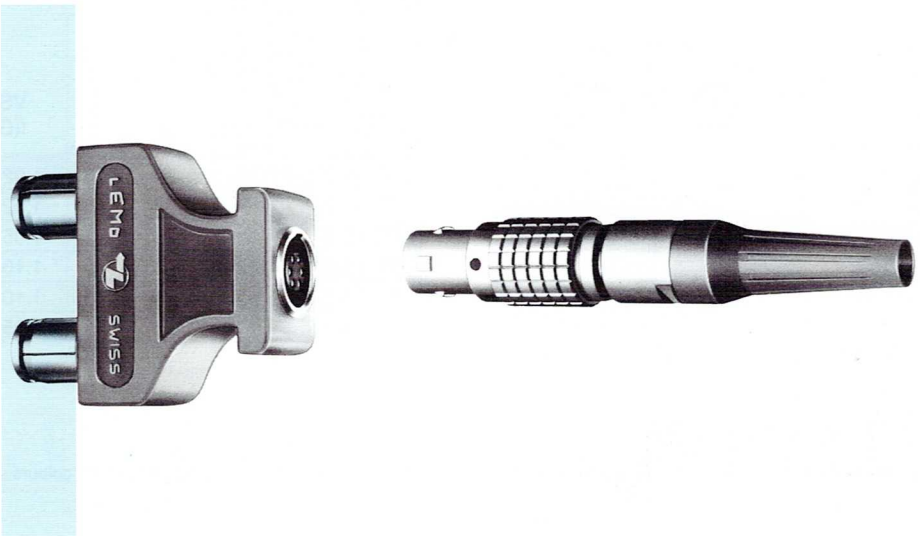


For audio mono applications:
Our manufacturing programme includes patch panels with connectors intermatable with series OS or 1S triaxial connectors, as well as with series OB and 1B three contact connectors.

For stereo applications:
Series 1D quadrax and series 1B six contact connectors are available for stereo applications.

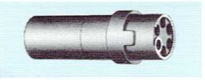
For video signals:
LEMO offers patch panels equipped with series OA and 1S coax 50 and 75Ω connectors.

Further information about technical characteristics of connectors used on patch panels for switching audio and video signals can be found in this catalogue.
In order to meet your specific needs in audio and video signal switching, we have the capability to offer you customized solutions.



Accessories

Insulators for crimp contacts



Series	Type	Insulator part number	
		Male	Female
0B-0K	302	FGG.0B.302.ML	EGG.0B.402.ML
	303	FGG.0B.303.ML	EGG.0B.403.ML
	304	FGG.0B.304.ML	EGG.0B.404.ML
	305	FGG.0B.305.ML	EGG.0B.405.ML
1B-1K	302	FGG.1B.302.ML	EGG.1B.402.ML
	303	FGG.1B.303.ML	EGG.1B.403.ML
	304	FGG.1B.304.ML	EGG.1B.404.ML
	305	FGG.1B.305.ML	EGG.1B.405.ML
	306	FGG.1B.306.ML	EGG.1B.406.ML
	307	FGG.1B.307.ML	EGG.1B.407.ML
2B-2K	302	FGG.2B.302.ML	EGG.2B.402.ML
	303	FGG.2B.303.ML	EGG.2B.403.ML
	304	FGG.2B.304.ML	EGG.2B.404.ML
	305	FGG.2B.305.ML	EGG.2B.405.ML
	306	FGG.2B.306.ML	EGG.2B.406.ML
	307	FGG.2B.307.ML	EGG.2B.407.ML
	308	FGG.2B.308.ML	EGG.2B.408.ML
	310	FGG.2B.310.ML	EGG.2B.410.ML
	312	FGG.2B.312.ML	EGG.2B.412.ML
	314	FGG.2B.314.ML	EGG.2B.414.ML
	316	FGG.2B.316.ML	EGG.2B.416.ML
	318	FGG.2B.318.ML	EGG.2B.418.ML
	319	FGG.2B.319.ML	EGG.2B.419.ML
3B-3K	302	FGG.3B.302.ML	EGG.3B..402.ML
	303	FGG.3B.303.ML	EGG.3B.403.ML
	304	FGG.3B.304.ML	EGG.3B.404.ML
	305	FGG.3B.305.ML	EGG.3B.405.ML
	306	FGG.3B.306.ML	EGG.3B.406.ML
	307	FGG.3B.307.ML	EGG.3B.407.ML
	308	FGG.3B.308.ML	EGG.,3B.408.ML
	309	FGG.3B.309.ML	EGG.3B.409.ML
	310	FGG.3B.310.ML	EGG.3B.410.ML
	312	FGG.3B.312.ML	EGG.3B.412.ML
	314	FGG.3B.314.ML	EGG.3B.414.ML
	316	FGG.3B.316.ML	EGG.3B.416.ML
	318	FGG.3B.318.ML	EGG.3B.418.ML
	320	FGG.3B.320.ML	EGG.3B.420.ML
	322	FGG.3B.322.ML	EGG.3B.422.ML
	324	FGG.3B.324.ML	EGG.3B.424.ML
	326	FGG.3B.326.ML	EGG.3B.426.ML
	328	FGG.3B.328.ML	EGG.3B.428.ML
	330	FGG.3B.330.ML	EGG.3B.430.ML
	844	FGG.3B.344.XL	EGG.3B.444.XL
	850	FGG.3B.350.XL	EGG.3B.450.XL
3P	306	FGG.3P.306.ML	EGG.3P.406.ML
	310	FGG.3P.310.ML	EGG.3P.410.ML
	314	FGG.3P.314.ML	EGG.3P.414.ML
4B-4K	304	FGG.4B.304.ML	EGG.4B.404.ML
	306	FGG.4B.306.ML	EGG.4B.406.ML
	307	FGG.4B.307.ML	EGG.4B.407.ML
	310	FGG.4B.310.ML	EGG.4B.410.ML
	312	FGG.4B.312.ML	EGG.4B.412.ML
	316	FGG.4B.316.ML	EGG.4B.416.ML
	320	FGG.4B.320.ML	EGG.4B.420.ML
	324	FGG.4B.324.ML	EGG.4B.424.ML
	330	FGG.4B.330.ML	EGG.4B.430.ML
	340	FGG.4B.340.XL	EGG.4B.440.XL
	852	FGG.4B.352.XL	EGG.4B.452.XL
	856	FGG.4B.356.XL	EGG.4B.456.XL
	858	FGG.4B.358.XL	EGG.4B.458.XL
	885	FGG.4B.385.XL	EGG.4B.485.XL

Series	Type	Insulator part number	
		Male	Female
5B-5K	304	FGG.5B.304.ML	EGG.5B.404.ML
	310	FGG.5B.310.ML	EGG.5B.410.ML
	314	FGG.5B.314.ML	EGG.5B.414.ML
	316	FGG.5B.316.ML	EGG.5B.416.ML
	320	FGG.5B.320.ML	EGG.5B.420.ML
	330	FGG.5B.330.ML	EGG.5B.430.ML
	340	FGG.5B.340.ML	EGG.5B.440.ML
	348	FGG.5B.348.ML	EGG.5B.448.ML
	350	FGG.5B.350.ML	EGG.5B.450.ML
	354	FGG.5B.354.ML	EGG.5B.454.ML
	364	FGG.5B.364.ML	EGG.5B.464.ML
	850	FGG.5B.350.XL	EGG.5B.450.XL
	870	FGG.5B.350.XL	EGG.5B.450.XL
	856	FGG.5B.356.XL	EGG.5B.456.XL
	876	FGG.5B.356.XL	EGG.5B.456.XL
	857	FGG.5B.357.XL	FGG.5B.457.XL
	877	FGG.5B.357.XL	FGG.5B.457.XL
	867	FGG.5B.364.XL	FGG.5B.464.XL

Crimp contacts

Series	Ø Contact (mm)	Contact part number	
		Male	Female
0B-0K	0.9	FGG.0B.560.ZZC	EGG.0B.660.ZZM
	0.7	FGG.0B.555.ZZC	EGG.0B.655.ZZM
1B-1K	1.3	FGG.1B.565.ZZC	EGG.1B.665.ZZM
	0.9	FGG.1B.560.ZZC	EGG.1B.660.ZZM
	0.7	FGG.1B.555.ZZC	EGG.1B.655.ZZM
2B-2K	2.0	FGG.2B.575.ZZC	EGG.2B.675.ZZM
	1.6	FGG.2B.570.ZZC	EGG.2B.670.ZZM
	1.3	FGG.2B.565.ZZC	EGG.2B.665.ZZM
	0.9	FGG.2B.560.ZZC	EGG.2B.660.ZZM
	0.7	FGG.2B.555.ZZC	EGG.2B.655.ZZM
3B-3K	2.0	FGG.3B.575.ZZC	EGG.3B.675.ZZM
	1.6	FGG.3B.570.ZZC	EGG.3B.670.ZZM
	1.3	FGG.3B.565.ZZC	EGG.3B.665.ZZM
	0.9	FGG.3B.560.ZZC	EGG.3B.660.ZZM
	0.7	FGG.3B.555.ZZC	EGG.3B.655.ZZM
3P	0.9	FGG.3P.560.ZZC	EGG.3P.660.ZZM
4B-4K	3.0	FGG.4B.580.ZZC	EGG.4B.680.ZZM
	2.0	FGG.4B.575.ZZC	EGG.4B.675.ZZM
	1.6	FGG.4B.570.ZZC	EGG.4B.670.ZZM
	1.3	FGG.4B.565.ZZC	EGG.4B.665.ZZM
	0.9	FGG.4B.560.ZZC	EGG.4B.660.ZZM
	0.7	FGG.4B.555.ZZC	EGG.4B.655.ZZM
5B-5K	3.0	FGG.5B.580.ZZC	EGG.5B.680.ZZM
	2.0	FGG.5B.575.ZZC	EGG.5B.675.ZZM
	1.6	FGG.5B.570.ZZC	EGG.5B.670.ZZM
	1.3	FGG.5B.565.ZZC	EGG.5B.665.ZZM
	0.9	FGG.5B.560.ZZC	EGG.5B.660.ZZM

Plug caps

Part Number	Series	Cord length
BFG.0B.100.PCSG	0S-0B	55
BFG.1B.100.PCSG	1S-1B	62
BFG.2B.100.PCSG	2S-2B	75
BFG.3B.100.PCSG	3S-3B	95

This plug cap can be used with plugs of S or B series having a key (G).
On request this plug can be available in black instead of grey. For ordering, replace the last 'G' reference letter by 'N'.

Part Number	Series	Chain length
BFA.0E.100.NCS	0E	60
BFG.0K.100.NCS	0K	60
BFA.1E.100.NCS	1E	60
BFG.1K.100.NCS	1K	60
BFA.2E.100.NDS	2E	120
BFG.2K.100.NDS	2K	120
BFA.3E.100.NDS	3E	120
BFG.3K.100.NDS	3K	120
BFA.4S.100.NDS	4S	120
BFA.4E.100.NDS	4E	120
BFG.4K.100.NDS	4K	120
BFG.4M.100.NDS	4M	120
BFA.5S.100.PES[1)]	5S	200
BFA.5E.100.NES	5E	200
BFG.5K.100.NES	5K	200
BFG.6E.100.NES	6E	200

The third letter of the first three letter group refers to the plug keying. Letter 'C' of the reference number refers to the chain length (60 mm). Lengths of 120 mm and 200 mm are also available. If so, replace 'C' by 'D' or 'E'. The last letter 'S' of the reference number refers to the O ring material (silicone rubber). O ring made of FPM (Viton) are also available. If so, replace 'S' by 'V'

1)This model has a black POM (Ultraform) shell.

Blanking caps for fixed sockets and fixed straight couplers

Part Number	Series	Cord length
BRA.0B.200.PCSG	0S-0B	60
BRA.1B.200.PCSG	1B-1S	60
BRA.2B.200.PCSG	2S-2B 2C-2G	60
BRA.3B.200.PCSG	3S-3B	60

Blanking caps for free sockets

Part Number	Series	Cord length
BRD.0B.200.PCSG	0S-0B	55
BRD.1B.200.PCSG	1S-1B	62
BRD.2B.200.PCSG	2S-2B	75
BRD.3B.200.PCSG	3S-3B	95

Sprung dust caps

Part Number	Series
BRR.0S.200.PZSG	0S-0B
BRR.1S.200.PZSG	1S-1B
BRR.2S.200.PZSG	2S-2B
BRR.3S.200.PZSG	3S-3B

On request BRA, BRD and BRR caps are available in black instead of grey. For ordering replace the last letter 'G' of the part number by 'N'

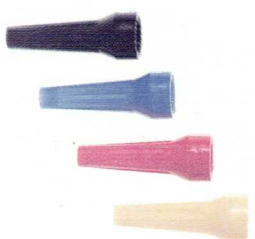
Note: All dimensions are in millimetres

Blanking caps for fixed sockets and fixed couplers

Part Number	Series	Chain length
BRC.00.200.NCS	00	60
BRC.0S.200.NCS	0S-0B	60
BRC.0E.200.NCS	0E	60
BRC.0K.200.NCS	0K	60
BRC.1S.200.NCS	1S-1B	60
BRC.1E.200.NCS	1E-1Y	60
BRC.1K.200.NCS	1K	60
BRC.2S.200.NDS	2S-2B	120
BRC.2E.200.NDS	2E	120
BRC.2K.200.NDS	2K	120
BRC.3S.200.NDS	3S-3B	120
BRC.3E.200.NDS	3E-3Y	120
BRC.3K.200.NDS	3K	120
BRC.4S.200.NDS	4S-4B	120
BRC.4E.200.NDS	4E	120
BRC.4K.200.NDS	4K-4M	120
BRC.5S.200.NES	5S-5B	200
BRC.5E.200.NES	5E	200
BRC.5K.200.NES	5K	200
BRC.6S.200.NES	6S	200
BRC.6E.200.NES	6E	200

The letter 'C' of the reference number refers to the chain length (60 mm). Lengths of 120 mm and 200 mm are also available. For ordering, replace letter 'C' by 'D' respectively 'E'.
The last letter 'S' of the reference number refers to the O ring material (silicone rubber). O rings made of FPM (Viton) are also available. For ordering, replace 'S' by 'V'. .Please note that caps for 0K to 5K series have no O ring.

Strain relief



Part Number	Series	Cable OD max	Cable OD min
GMB:00.018.DG	00[1)]	2.1	1.8
GMB:00.025.DG		2.8	2.5
GMB:00.028.DG		3.1	2.8
GMB:00.032.DG		3.5	3.2
GMA.0B.025.DG	0A 0S-0B 0E-0K	2.9	2.5
GMA.0B.030.DG		3.4	3.0
GMA.0B.035.DG		3.9	3.5
GMA.0B.040.DG		4.4	4.0
GMA.0B.045.DG		5.2	4.5
GMA.1B.025.DG	1B-1S 1E-1K 1Y	2.9	2.5
GMA.1B.030.DG		3.4	3.0
GMA.1B.035.DG		3.9	3.5
GMA.1B.040.DG		4.4	4.0
GMA.1B.045.DG		4.9	4.5
GMA.1B.054.DG		6.0	5.4
GMA.1B.065.DG		7.0	6.5
GMA.2B.040.DG	2S-2B 2E-2K 2C-2G	4.5	4.0
GMA.2B.045.DG		5.0	4.5
GMA.2B.050.DG		5.5	5.0
GMA.2B.060.DG		6.5	6.0
GMA.2B.070.DG		7.5	7.0
GMA.2B.080.DG		9.0	8.0
GMA.3B.050.DG	3S-3B 3E-3K 3Y-4S	5.2	4.5
GMA.3B.070.DG		7.9	7.0
GMA.3B.080.DG		8.9	8.0
GMA.3B.090.DG		10.0	9.0
GMA.4B.080.DG	4S-4B 4E-4K 4A-4M	9.0	8.0
GMA.4B.010.DG		10.9	10.0
GMA.4B.011.DG		11.9	11.0
GMA.4B.012.DG		13.0	12.0
GMA.4B.013.DG		14.5	13.0

1) Series 00 strain reliefs can be used on all models for crimping.

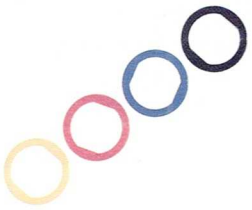
Note:
The diameters quoted for these parts are those of the tapered internal bore.

Ref.	Colour
A	blue
B	white
G	grey
J	yellow
M	brown

Ref.	Colour
N	black
R	red
S	orange
V	green

The last letter 'G' of the part number indicates a grey cable sleeve. For other colours, see adjacent table and replace letter 'G' by the letter of the colour required.

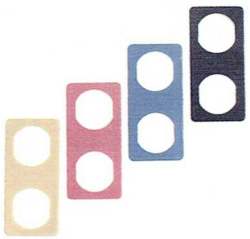
Insulating washers



Part Number	Series	Dim. A
GRA.00.269.GG	00	10
GRA.0S.269.GG	0A 0S-0B	12
GRA.1S.269.GG	1S-1B	16
GRA.2S.269.GG	2S-2B 2C-2G	21
GRA.3S.269.GG	3S-3B	25
GRA.4S.269.GG	4S-4B	32
GRA.5S.269.GG	5S-5B	44

Dimension A refers to outer dia. of insulating washer

Double panel washers



Part Number	Series	Dim. N	`R
GRC.0S.260.HG	0S-0B	26.5	12.5
GRC.1B.260.HG	1S-1B	34.5	14.5

Dimensions N and R refer to washer length and width respectively .

The last letter 'G' of the washer part number indicates the colour grey. For other colours, see the adjacent table and replace letter 'G' by the letter corresponding to the colour required.

Ref.	Colour
A	blue
B	white
G	grey
J	yellow
M	brown

Ref.	Colour
N	black
R	red
S	orange
V	green

Locking washers

Part Number	Series	Dim. A
GBA.00.250.FN	00	9.5
GBA.0S.250.FN	0A 0S-0B	12.5
GBA.1S.250.FN	1S-1B	16.0
GBA.1E.250.FN	1E-1K 1Y	21.8
GBA.2S.250.FN	2S-2B 2C-2G	19.5
GBA.3S.250.FN	3S-3B	25.0
GBA.4S.250.FN	4S-4B	32.0

Sockets of all series up to size 4 are always supplied with a locking washer. To order this part SEPARATELY, use the above part number.

Tapered washer

Part Number	Series	Dim. A
GBB.00.250.LN	00	9
GBB.0S.250.LN	0A 0S-0B	11
GBB.1S.250.LN	1S-1B	15
GBB.2S.250.LN	2S-2B 2C-2G	18
GBB.3S.250.LN	3S-3B	22
GBB.4S.250.LN	4S-4B	28
GBB.5S.250.LN	5S-5B	40

Sockets of the series 5S and 5B are always supplied with a tapered washer. To order this accessory SEPARATELY, refer to the above table.

Hexagonal nuts

Part Number	series	Dim. e
GEA.00.240.LN	00	M7x0.5
GEA.0S.240.LN	0A 0S-0B	M9x0.6
GEA.0S.241.LN	0S-0B	M10x0.75
GEA.0E.240.LN	0E-0K 1S-1B	M14x1.0
GEA.1S.240.LN	0S 1S-1B	M12x1.0
GEA.1E.240.LN	1E-1K 1Y 2S-2B	M16x1.0
GEA.2S.240.LN	2S-2B 2C-2G	M15x1.0
GEA.2E.240.LN	2E-2K	M20x1.0
GEA.3S.240.LN	3S-3B	M18x1.0
GEA.3E.240.LN	3E-3K 3Y	M24x1.0
GEA.4S.240.LN	4A-4S 4B	M25x1.0
GEA.4E.240.LN	4E-4K 4M	M30x1.0

Sockets and couplers are always supplied with a hexagonal nut. To order this part SEPARATELY, use adjacent part numbers. The last letters 'LN' of the part number refer to nut material and treatment. If a nut in aluminium alloy, Avional or stainless steel is desired, replace the last letters of the part number by 'PN', 'RN' or AZ respectively .

Round nuts

Part Number	Series	Dim. e
GEB.00.240.LN	00	M7x0.5
GEB.0S.240.LN	0S-0B	M9x0.6
GEB.0E.240.LN	0E-0K 1S-1B	M14x1.0
GEB.1S.240.LN	0S 1S-1B	M12x1.0
GEB.1E.240.LN	1E-1K 1Y 2S-2B	M16x1.0
GEB.2S.240.LN	2S-2B 2C-2G	M15x1.0
GEB.2B.240.LN	2B	M15x0.75
GEB.3S.240.LN	3S-3B	M18x1.0
GEB.4S.240.LN	4A 4S-4B	M25x1.0
GEB.5S.240.LN	5S-5B	M35x1.0
GEB.5E.240.LN	5E	M45x1.5
GEB.6S.241.LN	6S	M48x1.5
GEB.6E.240.LN	6E	M55x2.0

Sockets and couplers of series 5S, 5E, 5B and 6S are always supplied with round nuts.
To order this part SEPARATELY, use adjacent part number.

Conical nuts

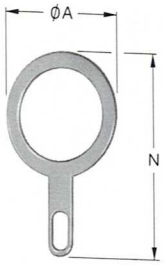
Part Number	Series	Dim. e
GEC.00.240.LC	00	M7x0.5
GEC.0S.240.LC	0A 0S-0B	M9x0.6
GEC.0E.240.LC	0B	M14x1.0
GEC.1S.240.LC	1S-1B	M12x1.0
GEC.1S.241.LC	1B	M16x1.0
GEC.2S.240.LC	2S-2B 2C-2G	M15x1.0
GEC.2S.241.LC[1)]	2B	M19x1.0
GEC.2E.240.LC	2E-2K	M20x1.0
GEC.3S.240.LC	3S-3B	M18x1.0
GEC.4S.240.LC	4B	M25x1.0

ERD models of series S, PFP models of series 0A, ECP models of series 2C and 2S, EC●, PF● and HC● models of series B with key(s) or keyway(s), are always supplied with a conical nut. To order this part SEPARATELY, use the above part number.

1) Can be used only with model HC● of series B

Note: All dimensions are in millimetres

Earthing washers



Part Number	Series	Dim.	
		A	N
GCA.00.255.LT	00	9.5	18.5
GCA.0S.255.LT	0A 0S-0B	13.0	22.0
GCA.0E.255.LT	0E-0K	17.0	27.5
GCA.1S.255.LT	1S-1B	17.0	27.5
GCA.1E.255.LT	1E-1K	20.0	32.0
GCA.2S.255.LT	2S-2B	20.0	32.0
GCA.2E.255.LT	2E-2K	25.0	39.0
GCA.3S.255.LT	3S-3B	25.0	39.0
GCA.4S.255.LT	4A 4S-4B	35.0	50.0
GCA.4E.255.LT	4E-4K 4M	35.0	50.0
GCA.5S.255.LT	5S-5B	42.0	57.5

Note: All dimensions are in millimetres

Lead-through with cable collet

Part Number	Cable OD	
	max.	min.
GSC.1S.290.ND52	5.2	4.1
GSC.1S.290.ND62	6.2	5.1
GSC.1S.290.ND72	7.2	6.1
GSC.1S.290.ND76	7.6	7.1

The lead-through with cable collet is suitable for screened or unscreened cables

Component	Material (Standard)	Surface treat. (µm)		
		Cu	Ni	Cr
Outer shell	Brass (ASTM C 385)	0.5	3	–
Collet	Brass (ASTM C 385)	0.5	3	–
Collet nut	Brass (ASTM C 385)	0.5	3	0.3
Locking washer	Bronze (ASTM C 521)	0.5	3	–
Hexagonal nut	Brass (ASTM C 385)	0.5	3	–

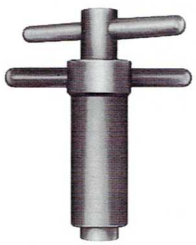
The surface treatment standards are as follows:
- Nickel FS-QQ-N-290A - Chrome FS-QQ-C-320B

Tooling

Spanners for hexagonal nuts

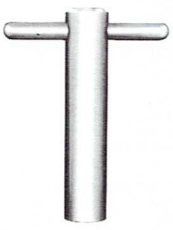
Part Number	Series	Nut part number
DCG.91.149.0TN	00	GEA.00.240.LN
DCG.91.161.1TN	0A 0S-0B	GEA.0S.240.LN
DCG.91.201.4TN	1S-1B	GEA.1S.240.LN
DCG.91.231.7TN	2S-2B 2C-2G	GEA.2S.240.LN
DCG.91.282.2TN	3S-3B	GEA.3S.240.LN

Spanners for hexagonal nuts with locator for flats on socket thread



Part Number	Series	Nut part number
DCA.91.149.0TN	00	GEA.00.240.LN
DCA.91.161.1TN	0A 0S-0B	GEA.0S.240.LN
DCA.91.201.4TN	1S-1B	GEA.1S.240.LN
DCA.91.231.7TN	2S-2B 2C-2G	GEA.2S.240.LN
DCA.91.282.2TN	3S-3B	GEA.3S.240.LN

Spanners for round nuts



Part Number	Series	Nut part number
DCB.91.119.0TN	00	GEB.00.240.LN
DCB.91.131.1TN	0A 0S-0B	GEB.0S.240.LN
DCB.91.161.4TN	1S-1B	GEB.1S.240.LN
DCB.91.201.8TN	2S-2B	GEB.2S.240.LN
DCB.91.242.2TN	3S-3B	GEB.3S.240.LN

Note: All dimensions are in millimetres

Set of flat spanners for collet nuts

Part Number	Series
DCP.91.001.TN	0B-1B
DCP.91.023.TN	2B-3B
DCP.91.045.TN	4B-5B

Flat spanner for collet nuts

Part Number	Series
DCP.99.000.TC	00

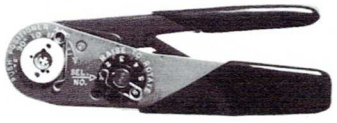
Spanners for assembling plugs with 2 latches

Part Number	Series
DCL.91149.0TK	1S

Spanners for assembling plugs with 3 latches

Part Number	Series
DCN.91.905.0TK	00
DCN.91.125.0TK	0S
DCN.91.171.2TK	2S-2C
DCN.91.201.5TK	3S

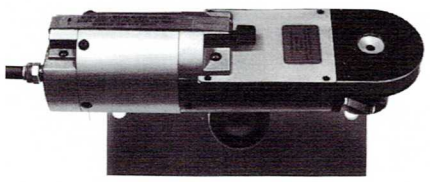
Manual crimping tool for LV contacts



Supplier	Part Number		
	Contact Ø	Contact Ø	Contact Ø
	0.7-0.9-1.3	1.6-2.0	3.0-4.0
LEMO	DPC.91.701.V[1)]	DPC.91.101.A[2)]	DPC.91.102.V
DANIELS	MH860 [1)]	AF8 [2)]	M300BT
ASTRO	616336 [1)]	615708 [2)]	–

1) According to specification MIL-C-22520/7-01
2) According to specification MIL-C-22520/1-01

Pneumatic crimping tool for LV contacts



Supplier	Part Number		
	Contact Ø	Contact Ø	Contact Ø
	0.7-0.9-1.3	1.6-2.0	3.0-4.0
LEMO	DPC.91.701.C[1)]	DPH.91.101.C[2)]	DPH.91.101.C
DANIELS	WA22P [1)]	WA27F [2)]	–
ASTRO	621101 [1)]	612141 [2)]	–

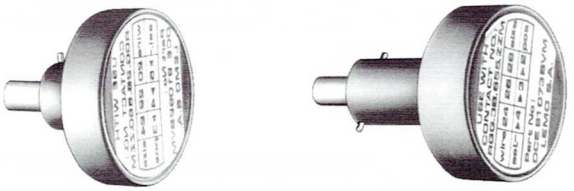
1) According to specification MIL-C-22520/7-01
2) According to specification MIL-C-22520/1-01

Crimping tools with dies for coax cables in mixed Coax + LV connectors

Connector			Part Number of crimping tool with die
Series	Coax type	Cable group	
3B-3K	C	1-3	DPA.99.103.8K
	C	2	DPA.99.103.1K
4B-4K	C	1-3	DPA.99.103.8K
	C	2	DPA.99.103.1K
5B-5K	B	1	DPA.99.173.8K
	B	2	DPA.99.123.1K
	B	3	DPB.99.123.8K
	B	5	DPA.99.127.4K
	B	6	DPA.99.176.2K

Note: All dimensions are in millimetres

Positioners for 0.7, 0.9 and 1.3 mm crimp contacts



Connector			Positioner	
Series	Contact Ø	Conductor AWG	For male contact part number	For female contact part number
0B-0K	0.9	20-22-24	DCE.91.090.BVC	DCE.91.090.BVM
	0.7	22-24-26	DCE.91.070.BVC	DCE.91.070.BVM
1B-1K	1.3	18-20-22	DCE.91.131.BVC	DCE.91.131.BVM
	0.9	20-22-24	DCE.91.091.BVC	DCE.91.091.BVM
	0.7	22-24-26	DCE.91.071.BVC	DCE.91.071.BVM
2B-2K	1.3	18-20-22	DCE.91.132.BVC	DCE.91.132.BVM
	0.9	20-22-24	DCE.91.092.BVC	DCE.91.092.BVM
	0.7	22-24-26	DCE.91.072.BVC	DCE.91.072.BVM
3B-3K	1.3	18-20-22	DCE.91.133.BVC	DCE.91.133.BVM
	0.9	20-22-24	DCE.91.093.BVC	DCE.91.093.BVM
	0.7	22-24-26	DCE.91.073.BVC	DCE.91.073.BVM
3P	0.9	20-22-24	DCE.91.093.PVC	DCE.91.093.PVM
4B-4K	1.3	18-20-22	DCE.91.134.BVC	DCE.91.134.BVM
	0.9	20-22-24	DCE.91.094.BVC	DCE.91.094.BVM
	0.7	22-24-26	DCE.91.074.BVC	DCE.91.074.BVM
5B-5K	1.3	18-20-22	DCE.91.134.BVC	DCE.91.134.BVM
	0.9	20-22-24	DCE.91.095.BVC	DCE.91.095.BVM

The above positioners only apply to New Generation, New Generation Watertight and to Plastic Groups.
They can be used with both manual and pneumatic crimping tools according to MIL-C-22520/7-01 standard.

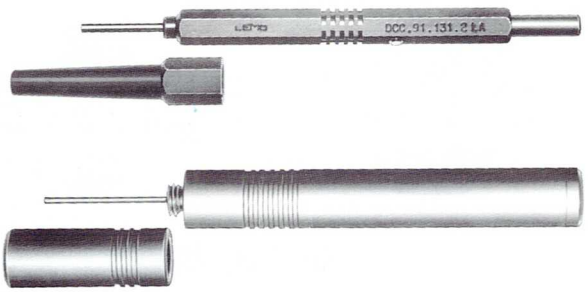
Note: A wide variation of strand number and diameter combinations are quoted as being AWG, some of which do not have a large enough cross section to guarantee a crimp as per either MIL-C-22520/1-01 or /7-01.
Our technical department is at your disposal to study and propose a solution to all your specific problems.

Turret for male and female 1.6, 2.0, 3.0 and 4.0 mm contacts

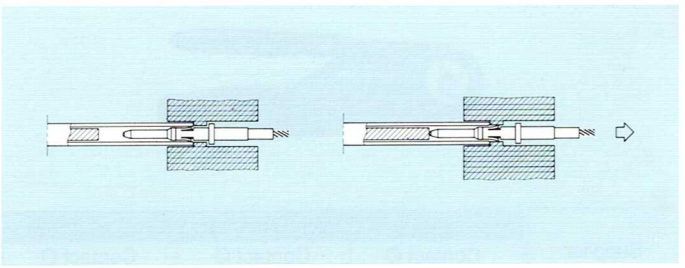
Connector			Part Number
Series	Contact Ø	Conductor AWG	
2B-2K	2.0	12-14-16	DCE.91.202.BVCM
	1.6	14-16-18	DCE.91.162.BVCM
3B-3K	2.0	12-14-16	DCE.91.203.BVCM
	1.6	14-16-18	DCE.91.163.BVCM
4B-4K	3.0	10-12-14	DCE.91.304.BVCM
	2.0	12-14-16	DCE.91.204.BVCM
	1.6	14-16-18	DCE.91.164.BVCM
5B-5K	4.0	8-10-12	DCE.91.405.BVCM
	3.0	10-12-14	DCE.91.305.BVCM
	2.0	12-14-16	DCE.91.205.BVCM
	1.6	14-16-18	DCE.91.165.BVCM

Except for 3.0 and 4.0 contacts these turrets can be used with both manual and pneumatic crimping tools according to MIL-C-22520/1-01 standard.

Extraction tools for crimp contacts



These tools apply only to B, K and 3P series.
Both models are used for male and female contacts.



Connector			Part Number of thumb-operated model	Part Number of automatic model
Series	Type	Contact Ø		
0B-0K	302/303	0.9	DCC.91.090.2LA	DCF.91.090.2LT
	304/305	0.7	DCC.91.070.2LA	DCF.91.070.2LT
1B-1K	302/303	1.3	DCC.91.131.2LA	DCF.91.131.2LT
	304/305	0.9	DCC.91.090.2LA	DCF.91.090.2LT
	306/307	0.7	DCC.91.070.2LA	DCF.91.070.2LT
	308	0.7	DCC.91.070.2LA	DCF.91.070.2LT
	731	1.3	DCC.91.131.2LA	DCF.91.131.2LT
2B-2K	302	2.0	DCC.91.202.2LA	DCF.91.202.2LT
	303	1.6	DCC.91.162.2LA	DCF.91.162.2LT
	304/305	1.3	DCC.91.131.2LA	DCF.91.131.2LT
	306/307	1.3	DCC.91.131.2LA	DCF.91.131.2LT
	308/310	0.9	DCC.91.090.2LA	DCF.91.090.2LT
	312/314	0.7	DCC.91.070.2LA	DCF.91.070.2LT
	316/318	0.7	DCC.91.070.2LA	DCF.91.070.2LT
	319	0.7	DCC.91.070.2LA	DCF.91.070.2LT
	802	0.9	DCC.91.090.2LA	DCF.91.090.2LT
	804/806	0.7	DCC.91.070.2LA	DCF.91.070.2LT
3B-3K	303/304	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	305/306	1.6	DCC.91.163.5LA	DCF.91.163.5LT
	307	1.6	DCC.91.163.5LA	DCF.91.163.5LT
	308	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	309	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	309	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	310	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	312/314	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	316/318	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	320/322	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	324/326	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	330	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	709/718	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	740	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	806/809	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	812	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	813	0.7	DCC.91.073.5LA	DCF.91.073.5LT

Connector			Part Number of thumb-operated model	Part Number of automatic model
Series	Type	Contact Ø		
3B-3K	844	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	850	0.7	DCC.91.073.5LA	DCF.91.073.5LT
3P	306/310	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	314	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	709	0.9	DCC.91.093.5LA	DCF.91.093.5LT
4B-4K	304	3.0	DCC.91.303.5LA	DCF.91.303.5LT
	306/307	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	310	1.6	DCC.91.163.5LA	DCF.91.163.5LT
	312	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	316/320	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	324/330	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	340	0.7	DCC.91.073.5LA	DCF.91.073.5LT
	802/804	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	806/822	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	824/826	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	842/844	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	852/856	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	858	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	885	0.7	DCC.91.073.5LA	DCF.91.073.5LT
5B-5K	304	4.0	DCC.91.405.5LA	
	310	3.0	DCC.91.303.5LA	DCF.91.303.5LT
	314/316	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	320	1.6	DCC.91.163.5LA	DCF.91.163.5LT
	330/340	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	348	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	350	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	354/364	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	850/856	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	857	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	857	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	864	1.3	DCC.91.133.5LA	DCF.91.133.5LT
	870/876	0.9	DCC.91.093.5LA	DCF.91.093.5LT
	877	2.0	DCC.91.203.5LA	DCF.91.203.5LT
	877	0.9	DCC.91.093.5LA	DCF.91.093.5LT

Extraction tools for B and C type coaxial contacts in mixed coax + LV connectors

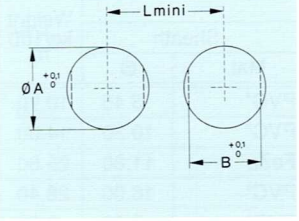
Connector		Coax type	Extractor Part Number
Series	Type		
3B	844/850	C	DCC.91.384.5LA
4B	852/856	C	DCC.91.384.5LA
	858/885	C	DCC.91.384.5LA
5B	850/856	B	DCC.91.804.5LA
	857/870	B	DCC.91.804.5LA
	876/877	B	DCC.91.804.5LA
	864	B	DCC.91.804.5LA

Note: All dimensions are in millimetres

Cut-out

Panel cut-out

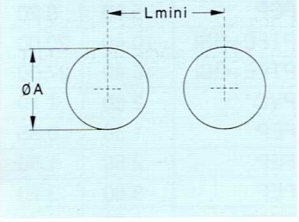
P1-P4



Series S

Series	P1			P2		P3		P4			P5		P6			P7			P8		
	A	B	L	A	L	A	L	A	B	L	A	L	A	B	H	A	B	H	A	B	C
00	7.1	6.4	11.5								6.95	10									
0S	9.1	8.3	13.5	9.1	14	12.1	19	10.1	9.1	15									2.3	10.2	13.5
1S	12.1	10.6	17.0	12.1	17	14.1	21	12.1	10.6	18	11.95	17	3.3	6.1	12.7	2.7	11.2	12.5			
2S	15.1	13.6	21.5			16.2	21	16.1	15.1	23			3.3	8.7	15.5						
3S	18.2	16.6	27.0	25.2	34	20.2	30	20.2	18.7	27			3.3	10.7	18.0						
4S	25.2	23.6	34.0			25.2	36	25.2	23.6	36											
5S	35.2	33.6	44.0			35.2	47	35.2	33.6	47			4.4	23.0	36.8						
6S	48.3	45.6	58.0					48.2	45.6	60											

P2-P3-P5



Model	Type
ABE	P1
EBC	P6
EBD	P6
EBS	P7
ECP	P1

Model	Type
EHP	P1
EPL	P9
ERA	P1
ERC	P1
ERD	P1

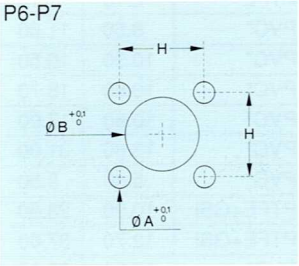
Model	Type
ERM	P1
ERN	P1
ERT	P5
EWB	P3
FAA	P1

Model	Type
FBC	P8
HGP	P3
HGW	P2
PSA	P1
PSP	P1

Model	Type
RAD	P1
SWH	P4

Series B

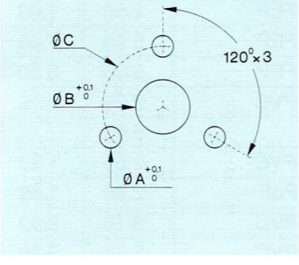
P6-P7



Series	P1			P2			P3			P4			P5	
	A	B	L	A	B	L	A	B	L	A	B	L	A	L
00	7.1	6.4	11.5											
0B	9.1	8.3	13.5	14.1	12.6	20	9.1	8.3	13.5	10.1	9.1	15.0	8.27	10.5
1B	12.1	10.6	17.0	16.2	14.6	22	12.1	10.6	19.0	14.1	12.6	21.0	11.17	14.0
2B	15.1	13.6	21.5	19.2	17.2	26	15.1	13.6	24.0	16.2	15.2	23.0		
3B	18.2	16.7	27.0				18.2	16.7	27.0	20.2	18.7	27.5		
4B	25.2	23.6	34.0							25.2	23.7	35.5		
5B	35.2	33.7	44.0							35.2	33.7	46.5		

1) Does not apply to series 00 multipole.
2) On request
3) P1 for series 1B
4) PCB drilling on request

P8



Model	Type
ECG	P1
EEG	P1[4]
EGG	P1
EHG	P1
EJG	P5

Model	Type
ENG	P1
EPG	P9[1]
ESG	P1[4]
EZG	P9[2]
FAG	P1

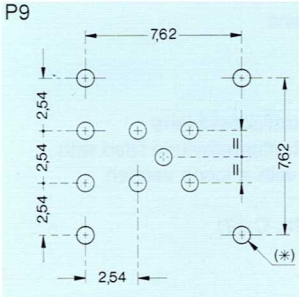
Model	Type
FWG	P1
HCG	P2
HGG	P1
HHG	P3
HNG	P1

Model	Type
PEG	P1
PFG	P1
PKG	P1
R●●	P4
S●●	P4[3]

Model	Type
YHG	P1

PCB drilling pattern

P9



(*): Hole dia.for solder studs: $0.8^{+0.1}_{0}$
Ø: Hole dia. for screw fitting: $1.7^{+0.1}_{0}$

Series E - K

Series	P1		
	A	B	L
0E-0K	14.1	12.6	20.5
1E-1K	16.1	14.6	22.0
3E-2K	20.2	18.7	29.0
3E-3K	24.2	22.7	35.5
4E-4K	30.2	28.7	43.0
5E-5K	45.2	42.7	56.5
6E	55.3	52.2	67.5

Model	Type
ERA	P1
FAA	P1
HGP	P1
PSA	P1
SWH	P1
PKG-PEG	P1
EGG-EEG	P1

Series Y

Series	P2	
	A	L
1Y	16.1	22.0
3Y	24.2	35.5
6Y	55.3	67.5

This table applies to ERA and PSA models

Series 3T

Model	P1		
	A	B	L
ERA	22.2	20.5	32

Series 4M

Model	P1			P6			P8		
	A	B	L	A	B	H	A	B	C
EHM	20.2	19.5	32						
ENG-PKG	30.2	28.7	43						
FBB-FBD				3.1	27.7	28.3	5	27.7	35

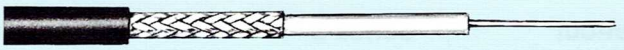
Series 1D

Model	P1		
	A	B	L
ERN-FAA	12.1	10.6	17.0

For all panel mounting models, HV types (New Generation) and TH (Thermocouples), refer to cut-out dimensions of the corresponding series.

Note: All dimensions are in millimetres

Recommended coaxial cables



Dimensions and characteristics

Supplier specification / Part Number		Imp. (Ω)	Construction and dimensions									Weight kg/100 m
			Conductor			Dielectric		Screen		Sheath		
MIL-C-17 E	IEC 96-2		Construction	Mat.	Ø	Mat.	Ø	Mat.	Ø	Mat.	Ø	
RG.6A/U		75 ± 3%	solid	CuSt	0.73	PE	4.70	AgCu	6.2	PVC*	8.45	10.70
RG.11A/U	75-7-1	75 ± 3%	7x0.40	CuSn	1.20	PE	7.25	Cu	8.2	PVC*	10.30	14.00
RG.12A/U		75 ± 3%	7x0.40	CuSn	1.20	PE	7.25	Cu	8.2	FeZc	11.80	25.60
RG.34B/U		75 ± 3%	7x0.62	Cu	1.86	PE	11.50	Cu	12.4	PVC*	16.00	28.40
RG.58C/U	50-3-1	50 ± 2%	19x0.18	CuSn	0.90	PE	2.95	CuSn	3.6	PVC*	5.00	3.80
RG.59B/U		75 ± 3%	solid	CuSt	0.60	PE	3.70	Cu	4.5	PVC*	6.10	5.00
RG.115A/U		50 ± 2%	7x0.75	CuAg	2.25	PTFE	6.50	Ag+Ag	8.0	PTFE+GSi	10.50	22.60
RG.122/U		50 ± 2%	27x0.13	CuSn	0.80	PE	2.50	CuSn	3.2	PVC*	4.10	3.20
RG.142B/U		50 ± 2%	solid	CuStAg	0.95	PTFE	2.95	Ag+Ag	4.3	FEP	5.00	6.20
RG.144/U	75-7-11	75 ± 3%	7x0.45	CuStAg	1.35	PTFE	7.25	CuAg	8.0	PTFE+GSi	10.40	20.00
RG.165/U	50-7-8	50 ± 2%	7x0.82	CuAg	2.46	PTFE	7.25	CuAg	8.0	PTFE+GSi	10.40	27.00
RG.174A/U	50-2-1	50 ± 2%	7x0.16	CuSt	0.48	PE	1.50	CuSn	2.0	PVC*	2.80	1.10
RG.178B/U	50-1-1	50 ± 2%	7x0.10	CuStAg	0.30	PTFE	0.84	CuAg	1.3	FEP	1.80	0.85
RG.179B/U	75-2-1	75 ± 3%	7x0.10	CuStAg	0.30	PTFE	1.50	CuAg	2.0	FEP	2.50	1.50
RG.180B/U		95 ± 5%	7x0.10	CuStAg	0.30	PTFE	2.60	CuAg	3.1	FEP	3.60	3.20
RG.187A/U	75-2-2	75 ± 3%	7x0.10	CuStAg	0.30	PTFE	1.50	CuAg	2.0	PTFE	2.60	1.60
RG.188A/U	50-2-3	50 ± 2%	7x0.18	CuStAg	0.54	PTFE	1.50	CuAg	2.0	PTFE	2.60	1.60
RG.196A/U	50-1-2	50 + 2%	7x0.10	CuStAg	0.30	PTFE	0.84	CuAg	1.3	PTFE	2.10	1.10
RG.212/U		50 ± 2%	solid	CuAg	1.35	PE	4.70	Ag+Ag	6.2	PVC*	8.50	11.80
RG.213/U	50-7-2	50 ± 2%	7x0.75	Cu	2.25	PE	7.25	Cu	8.2	PVC*	10.30	15.50
RG.214/U		50 + 2%	7x0.75	CuAg	2.25	PE	7.25	Ag+Ag	8.8	PVC*	10.80	18.70
RG.216/U		75 + 3%	7x0.40	CuSn	1.20	PE	7.25	Cu+Cu	8.8	PVC*	10.80	17.00
RG.217/U		50 ± 2%	solid	Cu	2.70	PE	9.40	Cu+Cu	11.2	PVC*	13.80	31.00
RG.223/U	50-3-5	50 ± 2%	solid	CuAg	0.89	PE	2.95	Ag+Ag	4.3	PVC*	5.40	5.50
RG.225/U		50 + 2%	7x0.82	CuAg	2.46	PTFE	7.25	Ag+Ag	8.8	PTFE+GSi	10.90	28.00
RG.226/U		50 + 2%	19x0.64	CuAg	3.18	PTFE	9.40	Cu+Cu	10.9	PTFE+GSi	12.70	37.00
RG.280/U		50 ± 2%	solid	Cu	2.90	PTFE	8.30	Ag+Ag	9.8	PVC*	12.20	29.40
RG.302/U	75-4-6	75 + 3%	solid	CuStAg	0.64	PTFE	3.70	CuAg	4.4	FEP	5.10	6.20
RG.303/U		50 + 2%	solid	CuStAg	0.95	PTFE	2.95	CuAg	3.6	FEP	4.30	5.10
RG.304/U		50 ± 2%	solid	CuStAg	1.50	PTFE	4.70	Ag+Ag	6.2	FEP	7.10	12.60
RG.316/U	50-2-2	50 ± 2%	7x0.18	CuStAg	0.54	PTFE	1.50	CuAg	2.0	FEP	2.50	1.60
RG.393/U		50 ± 2%	7x0.80	CuAg	2.40	PTFE	7.25	Ag+Ag	8.8	FEP	9.90	27.00
RG.400/U		50 ± 2%	19x0.20	CuAg	1.00	PTFE	2.95	Ag+Ag	4.3	FEP	5.00	6.30
Dätwyler HF-2114		50 ± 2%	7x0.16	Cu	0.48	PE	1.30	Cu	1.9	PVC	2.70	1.16
Dätwyler HF-5408/1		75 ± 3%			0.60		3.80				5.60	
LEMO CCE.99.281.505	50-2-1	50 ± 2%	7x0.18	Cu	0.54	PE	1.50	Cu	2.2	PVC*	2.80	1.27
LEMO CCH.99.281.505	50-2-1	50 ± 2%	7x0.18	Cu	0.54	PE	1.50	Cu	2.2	PoF	2.80	1.30
Philips 0722 102 11001		75 ± 3%	solid	Cu	0.32	PE	2.04	Cu	3.0	PVC	3.70	2.30
Philips 0722 102 29001		75 ± 3%	solid	Cu	0.32	PE	2.04	AgCu	3.0	PVC	3.70	2.00
Siemens 2YCY 0.4/25		75 ± 2%	solid	CuSt	0.40	PE	2.50	Cu	2.8	PVC	3.80	2.20
Siemens 2YCCY 0.4/25		75 ± 2%	solid	CuSt	0.40	PE	2.50	Cu	3.7	PVC	4.50	2.20

Abbreviations

Ag+Ag	Double screen, silver-plated copper
AgCu	Double screen
CR	Polychloroprene (Neoprene)
CSM	Hypalon
Cu	Bare copper
CuAg	Silver-plated copper
CuSn	Tinned copper
CuSt	Copper-plated steel
CuStAg	Silvered copper plated steel
FEP	Extruded Polytetrafluorethylene
FeZc	Galvanized iron armour
PE	Polyethylene
PoF	Polyolefine
PTFE	Wrapped or extruded Polytetrafluorethylene
PTFE+GSI	Wrapped or extruded Polytetrafluorethylene filled with fibreglass and impregnated with silicone varnish
PVC	Polyvinylchloride
PVC*	Polyvinylchloride (Qual.IIa MIL-C-17)

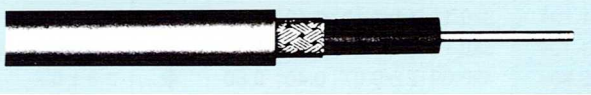
Note: All dimensions are in millimetres

Recommended Triaxial cables

Dimensions and characteristics

Supplier / Part Number	Basic coaxial	Imp. (Ω)	Construction and dimensions												
			Conductor			Dielectric 1		Screen 1		Dielectric 2		Screen 2		Sheath	
			Construction	Mat.	Ø	Mat.	Ø	Mat.	Ø	Mat.	Ø	Mat.	Ø	Mat.	Ø
Amphenol 21.204		50	19x0.18	CuSn	0.9	PE	3.0	CuSn	3.6	PVC	5.0	CuSn	5.6	PVC	7.3
Amphenol 21.738		50	7x0.25	CuSt	0.8	PE	2.5	CuAg	3.1	PVC	3.7	CuAg	4.3	PVC	5.0
Belden 8215	RG.179B/U	75	7x0.10	CuSt	0.3	PTFE	1.5	CuAg	2.0	PE					8.5
Belden 8232	RG.59/U	75	solid	CuSt	0.8	PE	3.6	Cu	4.5	PE	5.8	Cu	6.5	PE	8.0
Belden 8233	RG.11A/U	75	solid	Cu	1.6	PE	7.3	Cu	8.0	PE	9.3	Cu	10.0	PE	12.1
Belden 9192	RG.11/U	75	19x0.36	Cu	1.6	PE	7.9	Cu		PE		Cu		PVC	13.2
Belden 9222	RG.58A/U	50	7x0.32	CuSn	0.9	PE	2.9	CuSn				CuSn		PVC	6.1
Belden 9232	RG.11/U	75	19x0.36	Cu	1.9	PE	7.9	Cu	8.7	PE	9.9	Cu	10.7	CSM	13.2
Belden 9267	RG.59/U	75	solid	Cu	0.8	PE	3.7	Cu	4.5	PE	5.5	Cu	6.4	CSM	9.2
Belden 9888	RG.8/U	50	7x19	Cu	2.7	PE	7.3	Cu		PE		Cu		PE	12.2
BICC T1894		75	solid	Cu	1.8	PE	8.0	Cu	8.9	PE	10.0	Cu	10.9	PVC	13.0
BIW 10069-C-G20		75	solid		0.8	PoF	3.7		4.5	PoF	5.4		6.2	CR	9.6
BIW 10070-C-G14		75			1.8	PE	8.3		9.1	PE	10.5		11.2	CR	14.2
Dätwyler HF-2318		50	7x0.52	CuSn	1.6	PE	4.8	CuSn				CuSn		PVC	10.2
Dätwyler HF-2426	RG.59/U	75	solid	CuSt	0.6	PE	3.7	Cu				Cu		PVC*	8.0
F&G 12765700		75		Cu	1.0	PE	4.8			PE	6.6	Cu		PVC	8.5
F&G 12766400		75		Cu	1.4	PE	6.5			PE	8.7	Cu		PVC	11.0
F&G 12766601		75		CuAg	1.4	PE	6.5	CuAg	7.2	PE	8.7	Cu	9.4	PUR	12.2
F&G 12766700		75		Cu	2.2	PE	9.7			PE	11.8	Cu		PVC	14.4
Filotex 11820	RG.58B/U	50	19x0.18	CuSn	0.9	PE	3.0							PVC	7.2
Fujikura 4.6/1.0 EFTX		75	solid	Cu	1.0	FEP	4.6	Cu	4.9		6.0	Cu	6.3	PVC	8.8
LEMO CTA.99.290.803	RG.178B/U	50	70x0.10	CuStAg	0.3	PTFE	0.9	CuAg	1.4	FEP	1.9	CuAg	2.3	FEP	2.9
LEMO CTC.99.371.603	RG.179B/U	75	7x0.10	CuStAg	0.3	PTFE	1.5	CuAg	2.0	FEP	2.6	CuAg	3.1	FEP	3.7
LEMO CTD.99.391.505	RG.174A/U	50	7x0.16	CuStAg	0.5	PE	1.5	CuSn	1.9	PVC	2.5	CuSn	2.9	PVC	3.9

Recommended High Voltage cables



Dimensions and characteristics

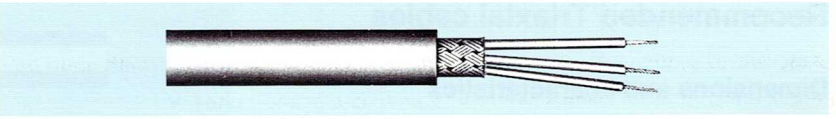
MIL-C-17E Standard Supplier / Part Number	Construction and dimensions									
	Conductor			Dielectric		Screen		Sheath		Corona Screen
	Construction	Mat.	Ø	Mat.	Ø	Mat.	Ø	Mat.	Ø	
RG.58C/U	19x0.18	CuSn	0.9	PE	3.0	CuSn	3.60	PVC*	5.0	no
RG.141A/U	solid	CuStAg	1.0	PTFE	3.0	CuAg	3.60	PTFE	4.8	no
RG.213/U	7x0.75	Cu	2.3	PE	7.3	Cu	8.20	PVC*	10.3	no
RG.214/U	7x0.75	CuAg	2.3	PE	7.3	Ag+Ag	8.80	PVC*	10.8	no
RG.220/U	solid	Cu	6.6	PE	23.1	Cu	24.4	PVC*	28.4	no
Belden 8866	16x0.25	CuSt	1.2	PE	4.6			PVC	5.3	yes
Belden 8869	7x0.25	CuSt	0.7	PE	2.4			PVC	3.1	yes
Gore F01A80	19x0.10	CuAg	0.5					PTFE	1.6	no
LEMO CHE.99.483.005	14x0.15	Cu	0.6	PE	2.8	Cu	3.50	PVC	4.6	no
NEK 5kV 07506	7x0.17	Cu	0.5	PE	1.5	Cu	2.30	PoF	3.2	yes
NEK 10kV 07547	7x0.20	Cu	0.6	PE	2.3	Cu	3.20	PoF	4.4	yes
NEK 20kV 07516	7x0.20	Cu	0.6	PE	3.7	Cu	4.80	PoF	6.1	yes
Lynenwerk 2YCH 20kV	7x0.43	Cu	1.4	PE	3.7	Cu	4.80		6.5	yes
Lynenwerk 2YCH 30kV	7x0.43	Cu	1.4	PE	4.7	Cu	5.80		7.5	yes

Abbreviations

Ag+Ag	Double screen silver-plated copper
CR	Polychloroprene (Neoprene)
CSM	Hypalon
Cu	Bare copper
CuAg	Silver-plated copper
CuSn	Tinned-copper
CuSt	Copper-plated steel
CuStAg	Silvered copper-plated steel
FEP	Extruded Polytetrafluorethylene
PE	Polyethylene
PoF	Polyolefine
PTFE	Wrapped or extruded Polytetrafluorethylene
PVC	Polyvinylchloride
PVC*	Polyvinylchloride (Qual.IIa MIL-C-17)

Note: All dimensions are in millimetres

Recommended multiconductor cables



General characteristics

Characteristics	Unit	Conductor cross section (mm^2)				
		0.9-1.4	0.25	0.50	0.75	1.50
Max. operating voltage	Vrms	250	300	380	500	500
Breakdown voltage	kVrms	>10	>10	>12	>12	>12
Conductor resistance	Ω / km	≤ 132	≤ 81	≤ 39	≤ 26	≤ 13.3
Insulation resistance	Ωm	≥ 2.10^{10} (à 20°C - 68°F)				
Capacitance conductor/conductor	pF / m	135	150	140	165	180
Capacitance screen/screen	pF / m	180	200	230	270	300
Operating temperature	°C	- 5 + 70 (+ 23°F + 158°F)		- 5 + 80 (+ 23°F + 176°F)		
Storing temperature	°C	- 30 + 70 (- 22°F + 158°F)		- 30 + 80 (- 22°F + 176°F)		
Bending radii		10 x outer dia. for fixed application				
		15 x outer dia. for repeated bending				

Material

Component	Material
Conductor	Bare copper (Cu)
Insulation	Polyvinylechloride (PVC)
Screen	Bare copper (Cu)[1]
	Tinned copper (CuSn)
Outer sheath	Polyvinylechloride (PVC)
	Polyethylenetesephtalate (PETP)[2]

Notes:
Insulation colour sequence according to DIN 47100
1) for CMB.02.381.005 and CMB.03.381.104
2) for CMB.04.361.205

Dimensions

Part Number	Cond. No x section (mm^2)	Conductor		Insulation	Screen	Sheath
		Strand	Ø	Ø		Ø
CMZ.02.331.005	2x0.14	18x0.10	0.50	1.05		3.3 ± 0.2
CMB.02.381.005	2x0.14	18x0.10	0.50	1.05	●	3.8 ± 0.2
CMZ.03.361.104	3x0.11	14x0.10	0.40	1.10		3.6 ± 0.2
CMB.03.381.104	3x0.11	14x0.10	0.40	1.10	●	3.8 ± 0.2
CMB.04.330.804	4x0.09	21x0.07	0.40	0.80	●	3.3 ± 0.2
CMB.04.361.205	4x0.14	18x0.10	0.50	1.20	●	3.6 ± 0.2
CMB.05.331.204	5x0.09	14x0.10	0.40	1.20	●	3.3 ± 0.2
CMB.06.581.205	6x0.14	18x0.10	0.50	1.20	●	5.8 ± 0.2
CMB.10.671.205	10x0.14	18x0.10	0.50	1.20	●	6.7 ± 0.2
CMB.14.741.205	14x0.14	18x0.10	0.50	1.20	●	7.4 ± 0.2
CMB.02.461.407	2x0.25	14x0.15	0.75	1.40	●	4.6 ± 0.2
CMB.03.481.407	3x0.25	14x0.15	0.75	1.40	●	4.8 ± 0.2
CMB.04.521.407	4x0.25	14x0.15	0.75	1.40	●	5.2 ± 0.2
CMB.05.561.407	5x0.25	14x0.15	0.75	1.40	●	5.6 ± 0.2
CMB.06.621.407	6x0.25	14x0.15	0.75	1.40	●	6.2 ± 0.2
CMB.07.621.407	7x0.25	14x0.15	0.75	1.40	●	6.2 ± 0.2
CMB.08.691.407	8x0.25	14x0.15	0.75	1.40	●	6.9 ± 0.2
CMB.10.791.407	10x0.25	14x0.15	0.75	1.40	●	7.9 ± 0.2
CMB.12.811.407	12x0.25	14x0.15	0.75	1.40	●	8.1 ± 0.2
CMB.14.851.407	14x0.25	14x0.15	0.75	1.40	●	8.5 ± 0.2
CMB.16.891.407	16x0.25	14x0.15	0.75	1.40	●	8.9 ± 0.2
CMB.18.971.470	18x0.25	14x0.15	0.75	1.40	●	9.7 ± 0.2
CMB.20.101.407	20x0.25	14x0.15	0.75	1.40	●	10.3 ± 0.2
CMB.24.111.407	24x0.25	14x0.15	0.75	1.40	●	11.3 ± 0.2
CMZ.02.532.009	2x0.50	16x0.20	0.90	2.00		5.3 ± 0.2
CMB.02.602.009	2x0.50	16x0.20	0.90	2.00	●	6.0 ± 0.2
CMB.03.662.009	3x0.50	16x0.20	0.90	2.00	●	6.6 ± 0.2
CMB.04.702.009	4x0.50	16x0.20	0.90	2.00	●	7.0 ± 0.2
CMB.05.772.009	5x0.50	16x0.20	0.90	2.00	●	7.7 ± 0.2
CMB.06.832.009	6x0.50	16x0.20	0.90	2.00	●	8.3 ± 0.2
CMB.07.832.009	7x0.50	16x0.20	0.90	2.00	●	8.3 ± 0.2
CMB.08.892.009	8x0.50	16x0.20	0.90	2.00	●	8.9 ± 0.2
CMB.12.102.009	12x0.50	16x0.20	0.90	2.00	●	10.8 ± 0.2
CMB.16.122.009	16x0.50	16x0.20	0.90	2.00	●	12.3 ± 0.2

Part Number	Cond. No x section (mm^2)	Conductor		Insulation	Screen	Sheath
		Strand	Ø	Ø		Ø
CMB.20.132.009	20x0.50	16x0.20	0.9	2.0	●	13.5 ± 0.2
CMB.24.152.009	24x0.50	16x0.20	0.9	2.0	●	15.3 ± 0.2
CMB.28.162.009	28x0.50	16x0.20	0.9	2.0	●	16.1 ± 0.2
CMB.36.172.009	36x0.50	16x0.20	0.9	2.0	●	17.9 ± 0.2
CMB.40.182.009	40x0.50	16x0.20	0.9	2.0	●	18.5 ± 0.2
CMB.50.202.009	50x0.50	16x0.20	0.9	2.0	●	20.7 ± 0.2
CMZ.02.572.210	2x0.75	24x0.20	1.0	2.2		5.7 ± 0.2
CMB.02.672.210	2x0.75	24x0.20	1.0	2.2	●	6.7 ± 0.2
CMB.03.702.210	3x0.75	24x0.20	1.0	2.2	●	7.0 ± 0.2
CMB.04.762.210	4x0.75	24x0.20	1.0	2.2	●	7.6 ± 0.2
CMB.06.892.210	6x0.75	24x0.20	1.0	2.2	●	8.9 ± 0.2
CMB.08.102.210	8x0.75	24x0.20	1.0	2.2	●	10.0 ± 0.2
CMB.12.122.210	12x0.75	24x0.20	1.0	2.2	●	12.0 ± 0.2
CMB.14.122.210	14x0.75	24x0.20	1.0	2.2	●	12.6 ± 0.2
CMB.20.142.210	20x0.75	24x0.20	1.0	2.2	●	14.9 ± 0.2
CMB.24.162.210	24x0.75	24x0.20	1.0	2.2	●	16.5 ± 0.2
CMB.28.182.210	28x0.75	24x0.20	1.0	2.2	●	18.0 ± 0.2
CMB.32.182.210	32x0.75	24x0.20	1.0	2.2	●	18.7 ± 0.2
CMB.36.192.210	36x0.75	24x0.20	1.0	2.2	●	19.3 ± 0.2
CMB.50.222.210	50x0.75	24x0.20	1.0	2.2	●	22.4 ± 0.2
CMZ.02.782.815	2x1.50	30x0.25	1.5	2.8		7.8 ± 0.2
CMB.02.852.815	2x1.50	30x0.25	1.5	2.8	●	8.5 ± 0.2
CMB.03.892.815	3x1.50	30x0.25	1.5	2.8	●	8.9 ± 0.2
CMB.04.972.815	4x1.50	30x0.25	1.5	2.8	●	9.7 ± 0.2
CMB.06.112.815	6x1.50	30x0.25	1.5	2.8	●	11.3 ± 0.2
CMB.08.122.815	8x1.50	30x0.25	1.5	2.8	●	12.2 ± 0.2
CMB.12.142.815	12x1.50	30x0.25	1.5	2.8	●	14.5 ± 0.2
CMB.14.152.815	14x1.50	30x0.25	1.5	2.8	●	15.3 ± 0.2
CMB.18.162.815	18x1.50	30x0.25	1.5	2.8	●	16.9 ± 0.2
CMB.20.182.815	20x1.50	30x0.25	1.5	2.8	●	18.1 ± 0.2
CMB.24.202.815	24x1.50	30x0.25	1.5	2.8	●	20.1 ± 0.2
CMB.28.212.815	28x1.50	30x0.25	1.5	2.8	●	21.2 ± 0.2
CMB.40.242.815	40x1.50	30x0.25	1.5	2.8	●	24.3 ± 0.2
CMB.50.272.815	50x1.50	30x0.25	1.5	2.8	●	27.3 ± 0.2

Note: All dimensions are in millimetres

● Screened cable

Cable assembly

LEMO will assemble connectors onto cables to your specifications, with short delievery times.

LEMO offers the following solutions to your cable and connector assembly problems:

1) We recommend the kind of cable and the connectors which suit your requirements most. If desired, we can supply cables cut to the correct length with connectors already assembled.
2) You know the characteristics, the supplier and the part numbers of the required cables. We order them for you and assemble any type of connectors.
3) You send us your cables and we assemble our connectors to your specifications.

	LEMO offers			
	Consultation	Cables	Connectors	Assembly
1)	yes	yes	yes	yes
2)	–	yes	yes	yes
3)	–	–	yes	yes

Please mention the following in your order

1) Connector part number
2) Cable part number
3) Overall lengths in metres
4) Wiring diagram and/or details.

Tables

Some formulae

Conversion of some units

millimetre into inch	1 mm	=	0.0394 in
inch into millimetre	1 in	=	25.4 mm
centimetre into foot	1 cm	=	0.0328 ft
foot (12in) into centimetre	1 ft	=	30.48 cm
square centimetre into square inch	1 cm^2	=	0.155 sq in
square inch into square centimetre	1 sq in	=	6.4516 cm^2
bar into Pascal	1 bar	=	10^5 Pa

Impedance of coaxial line

$$Z = \frac{138}{\sqrt{\varepsilon r}} \cdot \log \frac{D}{d}$$

Resistance R of a conductor

$$R = \rho \cdot \frac{l}{A}$$

Signal attenuation in decibels dB

$$dB = 20 \cdot \log \frac{U1}{U2}$$

VSWR effect on transmitted power

VSWR	VSWR (dB)	Return loss (dB)	Transmiss. loss (dB)	Reflected voltage coefficient	Transmit. power (%)	Reflected power (%)
1.00	0		0.000	00	100.0	0.0
1.01	0.1	46.1	0.000	0.00	100.0	0.0
1.02	0.2	40.1	0.000	0.01	100.0	0.0
1.03	0.3	36.6	0.001	0.01	100.0	0.0
1.04	0.3	34.2	0.003	0.03	100.0	0.0
1.05	0.4	32.3	0.003	0.02	99.9	0.1
1.06	0.5	30.7	0.004	0.03	99.9	0.1
1.07	0.6	29.4	0.005	0.03	99.9	0.1
1.08	0.7	28.3	0.006	0.04	99.9	0.1
1.09	0.7	27.3	0.008	0.04	99.8	0.2
1.10	0.8	26.4	0.010	0.05	99.8	0.2
1.11	0.9	25.7	0.012	0.05	99.7	0.3
1.12	1.0	24.9	0.014	0.06	99.7	0.3
1.13	1.1	24.3	0.016	0.06	99.6	0.4
1.14	1.1	23.7	0.019	0.07	99.6	0.4
1.15	1.2	23.1	0.021	0.07	99.5	0.5
1.16	1.3	22.6	0.024	0.07	99.5	0.5
1.17	1.4	22.1	0.027	0.08	99.4	0.6
1.18	1.4	21.7	0.030	0.08	99.3	0.7
1.19	1.5	21.2	0.033	0.09	99.2	0.8
1.20	1.6	20.8	0.036	0.09	99.2	0.8
1.21	1.7	20.4	0.039	0.10	99.1	0.9
1.22	1.7	20.1	0.043	0.10	99.0	1.0
1.23	1.8	19.7	0.046	0.10	98.9	1.1
1.24	1.9	19.4	0.050	0.11	98.9	1.1
1.25	1.9	19.1	0.054	0.11	98.8	1.2
1.26	2.0	18.8	0.058	0.12	98.7	1.3
1.27	2.1	18.5	0.062	0.12	98.6	1.4
1.28	2.1	18.2	0.066	0.12	98.5	1.5
1.29	2.2	17.9	0.070	0.13	98.4	1.6
1.30	2.3	17.7	0.075	0.13	98.3	1.7
1.32	2.4	17.2	0.083	0.14	98.1	1.9
1.34	2.5	16.8	0.093	0.15	97.9	2.1

VSWR	VSWR (dB)	Return loss (dB)	Transmiss. loss (dB)	Reflected voltage coefficient	Transmit. power (%)	Reflected power (%)
1.36	2.7	16.3	0.102	0.15	97.7	2.3
1.38	2.8	15.9	0.112	0.16	97.5	2.5
1.40	2.9	15.6	0.122	0.17	97.2	2.8
1.42	3.0	15.2	0.133	0.17	97.0	3.0
1.44	3.2	14.9	0.144	0.18	96.7	3.3
1.46	3.3	14.6	0.155	0.19	96.5	3.5
1.48	3.4	14.3	0.166	0.19	96.3	3.7
1.50	3.5	14.0	0.177	0.20	96.0	4.0
1.52	3.6	13.7	0.189	0.21	95.7	4.3
1.54	3.8	13.4	0.201	0.21	95.5	4.5
1.56	3.9	13.2	0.213	0.22	95.2	4.8
1.58	4.0	13.0	0.225	0.22	94.9	5.1
1.60	4.1	12.7	0.238	0.23	94.7	5.3
1.62	4.2	12.5	0.250	0.24	94.4	5.6
1.66	4.4	12.1	0.276	0.25	93.8	6.2
1.68	4.5	11.9	0.289	0.25	93.6	6.4
1.70	4.6	11.7	0.302	0.26	93.3	6.7
1.72	4.7	11.5	0.315	0.26	93.0	7.0
1.74	4.8	11.4	0.329	0.27	92.7	7.3
1.76	4.9	11.2	0.342	0.28	92.4	7.6
1.78	5.0	11.0	0.356	0.28	92.1	7.9
1.80	5.1	10.9	0.370	0.29	91.8	8.2
1.82	5.2	10.7	0.384	0.29	91.5	8.5
1.84	5.3	10.6	0.398	0.30	91.3	8.7
1.86	5.4	10.4	0.412	0.30	91.0	9.0
1.88	5.5	10.3	0.426	0.31	90.7	9.3
1.90	5.6	10.2	0.440	0.31	90.4	9.6
1.92	5.7	10.0	0.454	0.32	90.1	9.9
1.94	5.8	9.9	0.468	0.32	89.8	10.2
1.96	5.8	9.8	0.483	0.32	89.5	10.5
1.98	5.9	9.7	0.497	0.33	89.2	10.8
2.00	6.0	9.5	0.512	0.33	88.9	11.1
2.50	8.0	7.4	0.881	1.043	81.6	18.4

Table of wire gauges according to MIL-W-16878E (NAVY) Standard

AWG	Conductor No x Ø (mm)	Max Ø (mm)	Max Ø (in)	Section (mm^2)	Section (sq in)
0000	2109x0.254	16.129	0.635	106.8	0.1645
0000	259x0.722	15.748	0.620	106.0	0.1643
000	1672x0.254	13.843	0.545	84.7	0.1313
000	259x0.643	14.224	0.560	84.1	0.1303
00	1330x0.254	12.344	0.486	67.4	0.1044
00	259x0.573	12.469	0.492	66.8	0.1035
0	1045x0.254	10.947	0.431	52.9	0.0820
0	259x0.510	11.277	0.444	52.9	0.0820
1	817x0.254	9.702	0.382	41.4	0.0641
1	259x0.454	10.109	0.398	41.9	0.0649
2	665x0.254	8.686	0.342	33.9	0.0525
2	259x0.404	8.890	0.350	33.2	0.0514
2	133x0.573	9.017	0.355	34.3	0.0530
4	133x0.454	6.959	0.274	21.6	0.0334
6	133x0.360	5.511	0.217	13.6	0.0210
8	133x0.285	4.394	0.173	8.538	0.0132
10	105x0.254	3.302	0.130	5.3204	0.0082
10	37x0.404	2.921	0.115	4.7654	0.0073
10	1x2.588	2.616	0.103	5.2604	0.0081
12	65x0.254	2.514	0.099	3.2936	0.0051
12	37x0.321	2.311	0.091	2.9943	0.0046
12	19x0.454	2.362	0.093	3.0893	0.0047
12	1x2.053	2.082	0.082	3.3103	0.0051
14	41x0.254	2.057	0.081	2.0775	0.0032
14	19x0.0360	1.854	0.073	1.9447	0.0030
14	1x1.628	1.651	0.065	2.0816	0.0032
16	26x0.254	1.574	0.062	1.3174	0.0020
16	19x0.285	1.498	0.059	1.2291	0.0019
16	1x1.291	12.320	0.052	1.3090	0.0020
18	19x0.254	1.320	0.052	0.9703	0.0015
18	16x0.254	1.295	0.051	0.8107	0.0012
18	7x0.404	1.270	0.050	0.8973	0.0013
18	1x0.024	1.041	0.041	0.8235	0.0012
20	19x0.201	1.041	0.041	0.6089	$9.4x10^{-4}$
20	10x0.254	1.016	0.040	0.5067	$7.8x10^{-4}$
20	7x0.321	0.990	0.039	0.5664	$8.7x10^{-4}$
20	1x0.811	0.838	0.033	0.5178	$8.0x10^{-4}$
22	19x0.160	0.838	0.033	0.3820	$5.9x10^{-4}$
22	7x0.254	0.787	0.031	0.3574	$5.5x10^{-4}$
22	1x0.643	0.660	0.026	0.3257	$5.0x10^{-4}$
24	19x0.127	0.685	0.027	0.2406	$3.7x10^{-4}$
24	7x0.201	0.635	0.025	0.2243	$3.4x10^{-4}$
24	1x0.510	0.558	0.022	0.2050	$3.1x10^{-4}$
26	19x0.100	0.558	0.022	0.1522	$2.3x10^{-4}$
26	7x0.160	0.508	0.020	0.1407	$2.1x10^{-4}$
26	1x0.404	0.431	0.017	0.1283	$1.9x10^{-4}$
28	7x0.127	0.406	0.016	0.0886	$1.3x10^{-4}$
28	1x0.321	0.330	0.013	0.0809	$1.2x10^{-4}$
30	7x0.100	0.330	0.013	0.0560	$8.6x10^{-5}$
30	1x0.254	0.279	0.011	0.0510	$7.8x10^{-5}$
32	7x0.079	0.279	0.011	0.0340	$5.2x10^{-5}$
32	1x0.201	0.228	0.009	0.0320	$4.9x10^{-5}$

Table of wire gauges according to IEC-228 Standard

Conductor No x Ø (mm)	Max Ø (mm)	Max Ø (in)	Section (mm^2)	Section (sq in)
56x3.89	31.40	1.236	630.00	0.9767
1769x0.60	33.60	1.322	500.00	0.7751
61x3.19	27.70	1.090	500.00	0.7751
2013x0.50	30.10	1.185	400.00	0.6201
61x2.83	24.50	0.964	400.00	0.6201
1525x0.50	26.20	1.031	300.00	0.4651
61x2.51	21.30	0.838	300.00	0.4651
1221x0.50	23.30	0.917	240.00	0.3720
61x2.22	19.50	0.767	240.00	0.3720
925x0.50	20.30	0.799	185.00	0.2868
37x2.15	17.00	0.669	185.00	0.2868
756x0.50	18.30	0.720	150.00	0.2325
37x2.22	15.30	0.602	150.00	0.2325
608x0.50	16.40	0.657	120.00	0.1860
37x2.0	13.80	0.543	120.00	0.1860
475x0.50	14.50	0.570	96.00	0.1488
19x2.51	11.90	0.468	96.00	0.1488
360x0.50	12.70	0.500	70.00	0.1085
19x2.14	10.10	0.397	70.00	0.1085
396x0.40	10.60	0.417	50.00	0.0775
19x1.80	8.40	0.330	50.00	0.0775
276x0.40	8.90	0.350	35.00	0.0542
7x2.51	7.30	0.287	35.00	0.0542
196x0.40	7.50	0.295	25.00	0.0387
7x2.14	6.10	0.240	25.00	0.0387
125x0.40	6.00	0.236	16.00	0.0248
7x1.72	4.90	0.192	16.00	0.0248
1x4.50	4.50	0.177	16.00	0.0248
80x0.40	4.70	0.155	10.00	0.0155
7x1.38	3.95	0.155	10.00	0.0155
1x3.60	3.60	0.141	10.00	0.0155
84x0.30	3.70	0.145	6.00	0.0093
7x1.50	3.15	0.124	6.00	0.0093
1x2.76	2.76	0.108	6.00	0.0093
56x0.30	2.80	0.110	4.00	0.0062
7x0.86	2.58	0.098	4.00	0.0062
1x2.25	2.25	0.082	4.00	0.0062
50x0.25	2.15	0.084	2.50	0.0038
7x0.68	2.04	0.080	2.50	0.0038
1x1.78	1.78	0.070	2.50	0.0038
30x0.25	1.60	0.062	1.50	0.0023
7x0.52	1.56	0.061	1.50	0.0023
1x1.14	1.40	0.055	1.50	0.0023
32x0.20	1.35	0.053	1.00	0.0015
7x0.43	1.29	0.050	1.00	0.0015
1x1.15	1.15	0.045	1.00	0.0015
42x0.15	1.20	0.047	0.75	0.0011
28x0.20	1.15	0.045	0.75	0.0011
1x1.0	1.00	0.039	0.75	0.0011
28x0.15	0.95	0.037	0.50	$7.7x10^{-4}$
16x0.20	0.90	0.035	0.50	$7.7x10^{-4}$
1x0.80	0.80	0.031	0.50	$7.7x10^{-4}$
7x0.25	0.75	0.029	0.34	$5.2x10^{-4}$
1x0.60	0.60	0.023	0.28	$4.3x10^{-4}$
14x0.15	0.75	0.029	0.25	$3.8x10^{-4}$
7x0.20	0.65	0.023	0.22	$3.4x10^{-4}$
18x0.10	0.50	0.019	0.14	$2.1x10^{-4}$
14x0.10	0.40	0.015	0.11	$1.7x10^{-4}$
21x0.07	0.40	0.015	0.09	$1.3x10^{-4}$
14x0.10	0.40	0.015	0.09	$1.3x10^{-4}$

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